Anne Matilainen, Kaj Zimmerbauer,
Terttu Poranen (eds.)

The Role of Information Technology in Mediating External Information to the Rural Micro Enterprises

– Regional Literature Reviews of Northern Ostrobothnia and Central Finland

Reports 5

The Role of Information Technology in Mediating External Information to the Rural Micro Enterprises – Regional Literature Reviews of Northern Ostrobothnia and Central Finland

Rural Business Information Exchange System (RuBIES) Project

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Kaj Zimmerbauer
Terttu Poranen (eds.)

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Seinäjoki Institute for Rural Research and Training
Kampusranta 9
FIN - 60320 SEINÄJOKI
Tel. +358-6-4213 300
Fax +358-6-4213 301
www.helsinki.fi/ruralia/seinajoki

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Foreword

This literature review is a part of the research carried out in RuBIES (Rural Business Information Exhange System) project in 2004–2005. The aim of the transnational project is to provide assistance and support to remote rural businesses to improve their access to relevant business information and thereby improve business efficiency and decision-making. The project covers four Northern European countries (Finland, Sweden, Iceland and Scotland).

Regional literature reviews present in details an overview of the state-of-the-art concerning the use of ICT in rural small and medium sized enterprises (SMEs) in two case regions, Northern Ostrobothnia and Central Finland. The aim of the regional reviews is to get a comprehensive understanding of the situation and to find out possible special characteristics of the regions, especially focusing on RuBIES project themes.

In the literature reviews there are short descriptions of the rural SME profile in the regions and overview of the current situation concerning the knowledge and use of ICT and e-expert services. In addition they give a short overview of regional policy support and development activities aiming to enhance the use of ICT in the rural SMEs in the regions. The literature reviews also list the main e-expert services of the regions offered to rural SMEs.

RuBIES project is funded by Interreg III B, Northern Periphery Programme. National co-financiers in Finland are Ministry of Interior and Councils of Central Finland and Northern Osrobothnia. More information of the project is available in the RuBIES web pages (www.rubies.eu.com).

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Summary

Regional literature reviews present an overview of the use of ICT in rural small and medium sized enterprises (SMEs) in Nothern Ostrobothnia and Central Finland. These two regions provide excellent examples of regions consisting mainly of rural areas, but having also well-developed urban areas. The region of Central Finland is situated according to it's name in central part of Finland. The main city of the Central Finland region is Jyväskylä, which is influencing strongly also to the surrounding municipalities (Jyväskylä region). The population of Central Finland is very strongly concentrated to the Jyväskylä region. In 2003 over a half of the inhabitants of the Central Finland lived in this sub-region. Even though the population has been increasing in Jyväskylä region, it has decreased in every other sub-region.

Northern Ostrobothnia, on the other hand, is the second northernmost province in Finland, extending across the country from the Gulf of Bothnia coast to the border with Russia. It can be regarded mostly as core or peripheral countryside. However, the principal city, Oulu, is the second most important population centre in the country after Helsinki area. The population is strongly concentrated to the Oulu region. In 2004 approx. 54 % of the total population of Northern Ostrobothnia was living in Oulu region. Both of the most important cities of these two regions have created some of their growth by concentrating on information technology and high technology relating to that.

Even though there can be estimated to be some kind of lack of small business tradition in both of the regions due to their historical development, especially in rural areas the most of the companies in both regions can be defined as small or even micro enterprises. Also in both regions the there were a lot of regional variations in occupational as well as entrepreneurial structure.

When reviewing the regions of Northern Ostrobothnia and Central Finland more in details concerning the utilisation of ICT in rural enterprises, they seemed to follow quite well the national trends. In Northern Ostrobothnia approx 85–90 % of the enterprices used Internet in their businesses and the figure can be estimated to be at least the same in Central Finland (national percentages being over 90). The most used Internet services seem to be e-mail (communication), online banking and information search services.

The most significant benefits for SMEs of the use of Internet are: saving time (possibility to manage operations easier and faster, flexibility, on-line possibilities, accessibility to updated information), saving money (related to saving the time, savings in labour and logistic operations etc.) and relating to benefits mentioned above, indifference to business location.

Improving utilisation of ICT in rural areas and SMEs is in big a role in the regional development plans in both regions. Also in both regions the expertise on ICT development is at high level. In Northern Ostrobothnia, it was estimated that already by the year 2005 almost 100 % of the inhabitants are going to have a possibility to broadband connections. In Central Finland, this process is a bit slower. As well, when studying the penetration of Internet connections or amount of computers, Northern Ostrobothnia seemed to be a bit above the national

average, when in Central Finland as a region the figures were a bit below the national average. However, the variations within the regions were also significant.

Despite the fact, that in both regions there are a lot of business and sector specific advisory services available for SMEs provided by national actors as well as regional development organisations, according to regional surveys, it seems that entrepreneurs do not really know of them and some of them never use these services. This effects also to the use of e-services. The majority of regional expert/advisory services are not yet, however, in e-form.

According to the surveys, in both regions there seems to be a need for improving ICT skills especially among small rural SMEs. Though in both regions there are various short term courses and trainings available, somehow the supply does not seem to meet the demand and e.g. the courses have been cancelled due to the lack of participants.

As anticipated the entrepreneurs in remote rural areas seem to be a bit slower integrate ICT to their business actions in general. However, the preconditions to extend the utilisation of ICT in the future also in rural areas are good. The Internet connections are getting gradually better as well as there are constantly a lot of on-going development activities in improving services and education, even though there has been some critic towards them in both regions.

However, it can be stated that at the moment in both regions (as in other parts of Finland), the rural SMEs have not yet realised all the potential benefits offered by Internet services and the use of Internet is not yet seen as a part of business culture. At the moment SMEs use mainly more or less obligatory public external expert services (e.g. tax authorities). However, utilising widely external expert services might benefit especially the small rural SMEs, since they do not have possibilities to hire new skilled full-time staff for different business operations. Offering expert services in e-form may promote the use of external experts in remote rural SMEs (easy access to the external information), though the SMEs see that the accessibility of the services is not sufficient at the moment, products are not customer orientated enough and a support system is needed. However, before e-expert services can be fully utilised, there are more than just technical problems to be solved. The main problems seem to be in utilisation of the external knowledge in business actions and knowledge management. This necessitates new way of thinking also from the entrepreneurs and highlights the importance of entrepreneurs capability to apply the information to his/hers own business actions. The development of new ICT tools has been very rapid and sometimes the business culture has not been able to keep track of technological development.

Keywords: business information, ICT, small and medium sized enterprises, rural SMEs, e-expert services, micro enterprises, rural enterprises, rural areas, Central Finland, Northern Ostrobothnia.

The Role of Information Technology in Mediating External Information to the Rural Micro Enterprises – Regional Literature Review, Northern Osthrobothnia

University of Oulu
Oulu Southern Institute

Tanja Löytynoja

1 Enterprise Culture of the Small and Medium-Sized Enterprises in Northern Ostrobothnia

1.1 Northern Ostrobothnia and SME Profile in the Region

Northern Ostrobothnia is the second northernmost province in Finland. It extends across the country from the Gulf of Bothnia coast to the border with Russia, and it can be regarded mostly as core or peripheral countryside. The principal city, Oulu, is the second most important population centre in the country after capital Helsinki, however. The total population of Oulu and its surrounding districts is more than 200 000, and the population of the whole province is about 373 500 (in June 2004). (Council of Northern Ostrobothnia 2004.)

Northern Ostrobothnia is a growing and developing region. Thanks to high birth rate and the amount of young people as well as migration, the population is growing and has the lowest average age of any region in the country. In addition, the amount of employees will still increase within next 10 years, when it's already diminishing or soon will be in many other regions. (Council of Northern Ostrobothnia 2004.)

The region consists of seven sub-regions (government districts, see Figure 1) and four regional centres. The regional centres, which are Oulu sub-region, Oulu Southern, Koillis-Suomi and Raahe sub-region, belong to the national Regional Centre Programme. The aim of the Regional Centre Programme is the development of a network of regional centres covering every region or province, based on the particular strengths, expertise and specialisation of urban regions of various sizes. They are also important for surrounding rural areas. (Regional Centre Programme 2004.)

The profiles of regional centres in Northern Ostrobothnia are dissimilar. Oulu sub-region is known as an internationally significant centre of expertise and the centre of Northern Finland. Koillis-Suomi, which consists of Kuusamo, Taivalkoski, Posio and Salla municipalities (the latter two belong to Lapland province), is an important tourism centre and focuses on developing service structures of information society too. Raahe sub-region focuses on steel industry, but rural entrepreneurship is also becoming more significant. Oulu Southern region consists of three sub-regions: Ylivieska, Nivala-Haapajärvi and Siikalatva sub-regions. This regional centre invests on production of high technology and contract manufacturing. (Alueiden verkosto... 2004.)

In this regional literature review, current situation as well as demands for development of nature-based entrepreneurship and e-services are emphasised sub-regionally or by regional centres when there is lack of provincial data.

Northern Ostrobothnia is well-known as a region of high-tech expertise. Regional economy is strongly emphasised to *information technology.* The ICT cluster forms 25 % of the region's gross national product, which is twice as much as on the national level. In the field of network communication, especially in wireless network communication, Oulu region is ac-

tually one of the leading regions in the world. (Pohjois-Pohjanmaan liiton toimintasuunnitelma... 2004a; Pohjois-Pohjanmaa... 2003a.)

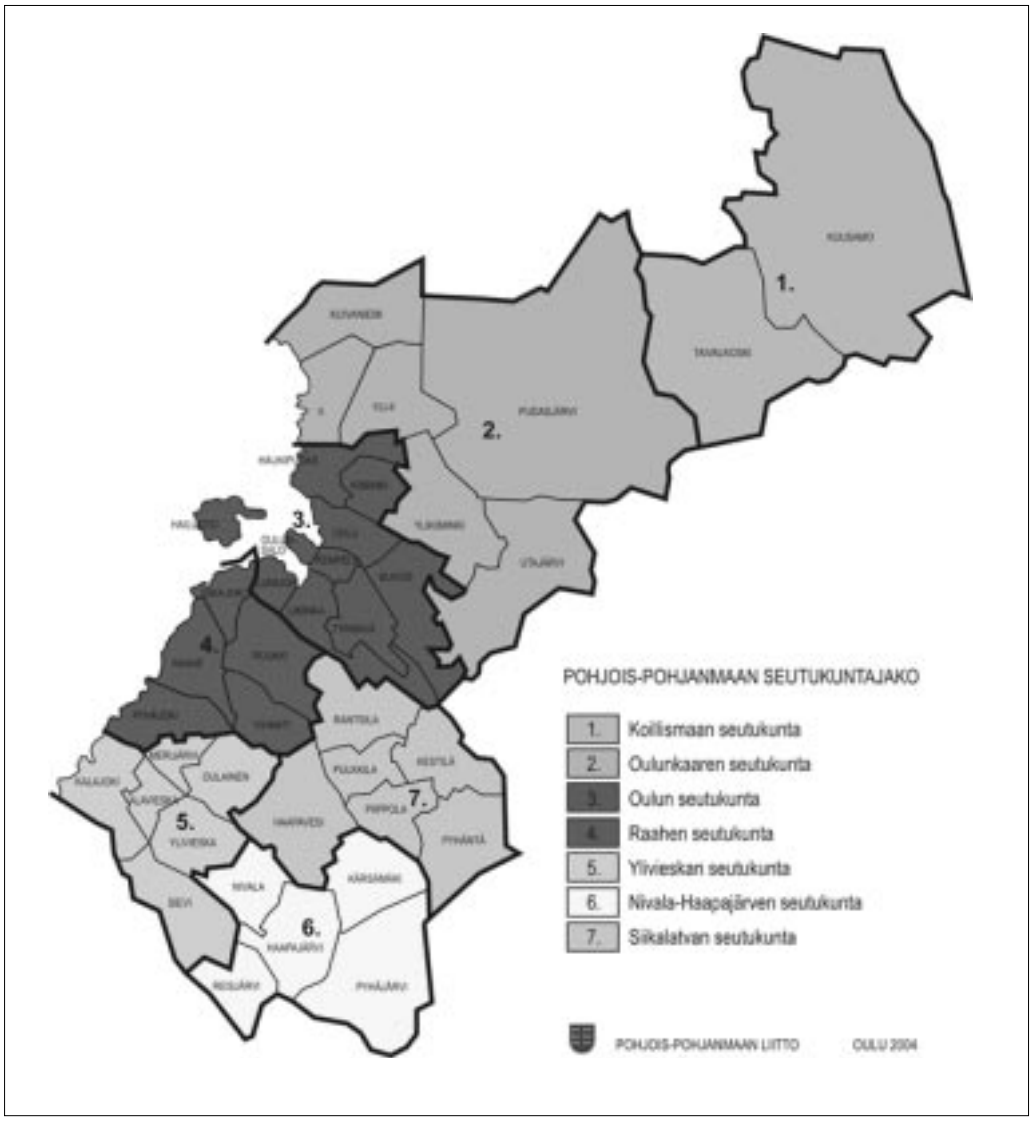

Figure 1. *The map of Northern Ostrobothnia including seven sub-regions (seutukunta = sub-regi on). (http://www.pohjois-pohjanmaa.fi/uudet/kunnat/kekun.htm)*

However, some traditional lines of business, e.g. wood, paper, chemical and steel industries are remarkable branches in the region too. The proportion of the *industry sector* is 21 % of the regional occupation structure (Table 1), which is more than on the average in Finland. In some sub-fields of the sector, like in mechanical wood processing industry the amount of jobs has been increased lately, but as the whole the share of this sector is diminishing. Another regionally significant sector is *primary production*, from which 7 % of the employed population of Northern Ostrobothnia gain their livelihood. For instance, the region is the biggest milk production area in Finland (Maatilatilastollinen vuosikirja 2001). Nevertheless, the amount of jobs in agriculture and forestry is falling off in Northern Ostrobothnia too.

There is 1/3 less farms currently than in 1995, which is very much because of worsening profitability and growing farm sizes. (Pohjois-Pohjanmaan talouskatsaus 2004; Helaakoski 2004.)

The proportion of *service sector* has been increased, and when taking into account all services its share is even 63 % from the occupational structure at the moment. For example, there has been estimated that the growth in trade, accommodation and restaurant services will be 5 000–7 000 jobs until 2015. (Helaakoski 2004.)

Table 1. *Occupational structure of Northern Ostrobothnia compared to Finland in 2003. Source: Adapted from Pohjois-Pohjanmaan talouskatsaus (the Economic Review of Northern Ostrobothnia), September 2004.*

Occupational structure in 2003				
	Employed 2003		**%**	
Northern	**Northern Ostrobothnia**	**Finland**	**Ostrobothnia**	**Finland**
Total	158 600	2 364 900	100	100
Primary	11 700	120 400	7,4	5,1
Industry	33 700	469 700	21,2	19,9
Construction	10 600	150 800	6,7	6,4
Trade, hotels and restaurants	21 000	362 500	13,2	15,3
Transportation	10 000	173 000	6,3	7,3
Finance	17 900	313 000	11,3	13,2
Public and other services	52 900	767 200	33,4	32,4
Unknown	860	7 300	0,5	0,3

However, regional variations in occupational structure are notable. For example, in Siikalatva sub-region the proportion of primary production was 18,3 % and in Nivala-Haapajärvi sub-region 17 % in 2003 (Kuntaliitto 2004). When examining the proportion by municipalities, variations are even bigger: in Merijärvi 43 %, Kestilä 37 %, Siikajoki 36 %, Rantsila and Reisjärvi 35 % of employed worked within primary production in 2002 (KuntaFakta 2002).

It has been said that there is lack of entrepreneurship tradition in Northern Ostrobothnia, which can be seen as a smaller amount of enterprises than on the average. At the moment, there are about 15 000 enterprises in the region, but the number of them varies quite much according to different sources. In addition, approximately 200 new enterprises are established each year. About 1/3 of enterprises operates in Oulu. (Pohjois-Pohjanmaan toimintaympäristöanalyysi 2004.)

Most of the enterprises are small or medium-sized enterprises, even if there are less SMEs in the region than nationally. In 2002 there were 11 722 business establishments with personnel of 0–4 persons, 1 318 business establishments with 5–9 persons and 665 business establishments with 10–19 persons (SuomiCD 2002). About 4 % of labour force consisted of farmers and 6 % of entrepreneurs (excluding farmers) in Northern Ostrobothnia.

There are good preconditions for practicing *nature-based entrepreneurship* in Northern Ostrobothnia. According to Rutanen and Luostarinen (2000), entrepreneurs, regional developers and financiers consider pure and many-sided nature and its special characters like water systems, wilderness-like forests and wood resources and fjelds as strengths in nature-based entrepreneurship in the region. People are used to live with nature, and there are strong traditions for e.g. collecting natural products. The region is a significant hunting and fishing region too. Also nearness of Oulu, good infrastructure and existence of some remarkable tourism destinations are important conditions for creating demand and making business profitable.

However, nature-based entrepreneurship is very fragmented in Northern Ostrobothnia. It's difficult to separate its proportion in occupational structure or in the amount of enterprises. In the preliminary study realised by Elomaa, Palojärvi and Sipola (2003), there have been examined current situation and developmental needs of nature-based entrepreneurship in Northern Ostrobothnia. According to the study, focuses on nature-based entrepreneurship are nature tourism, natural product line and small-sized wood processing. Enterprises are mostly micro-sized enterprises, and many of them operate part-timely or as a secondary occupation.

The most developed branch in nature-based entrepreneurship is *nature tourism,* but there are big differences in the size and operation of enterprises sub-regionally. The biggest nature tourism companies operate in Koillismaa sub-region, which is along with Oulu the strongest tourism region in Northern Ostrobothnia. In all, according to Employment and Economic Development Centre (Pohjois-Pohjanmaan talouskatsaus 2004), there were 908 business establishments in tourism cluster in Northern Ostrobothnia in 2002. However, the cluster includes hotels and restaurants, other tourism business like travel agencies, transportation services, programme services and services at tourist destinations, so the proportion of nature tourism enterprises is much smaller. For example, Merilä and Vähä (2003) have estimated in their study that in Oulu sub-region there are about 30 nature tourism enterprises offering programme services. They interviewed 18 entrepreneurs for the study and found out that only 12 of them operated full-timely. Most of those nature tourism enterprises employed 1-6 employees. In the research done by Laru, Törmänen and Matero (2004) in Oulunkaari and Raahe sub-regions, the most of the rural tourism enterprises who responded the survey operate in accommodation business (31 %) and employ 1–5 people.

Even if Northern Ostrobothnia is traditionally a region of strong collecting culture, there are only a few enterprises operating in *natural product line.* About 10 enterprises buy or sell forest berries, and about 5 enterprises operate with upgrading of berries. Some entrepreneurs provide and process mushrooms, herbs, vegetables or grow garden berries as well.

However, there are some special natural products, e.g. decoration lichen, in which Northern Ostrobothnia is the biggest producer and exporter in Finland. (Elomaa et al. 2003.)

The importance of *mechanical wood processing* as an employer is quite significant in Northern Ostrobothnia. There are about 3 000 jobs in the field, which is approximately 10 % of the industrial labour in the region. The amount of enterprises is 300 and most of them (85 %) are SMEs (under 10 employees). (Pohjoinen puutuoteteollisuus... 2002.) Some of those enterprises can be considered as nature-based enterprises.

When looking at different lines of business connected to nature-based entrepreneurship, there are some more detailed numbers available.

Significance of *natural resources branch* is remarkable in Northern Ostrobothnia. Nature environment of the region is many-sided, and forest and energy resources notable. There can be found all core functions of natural resources branch in the region: soil usage, peat production, agriculture and forestry, fishery, gardening, reindeer herding, natural product usage and experience economy (tourism). There are about 11 000 employed (7,4 % of all employed) working in this branch in the region. (Pohjois-Pohjanmaa 2003b; Luonnonvaraalan kohtalon kysymykset... 2004.)

According to the Development Strategy of Environmental Business in Northern Ostrobothnia (Salomaa & Niemikorpi 2001), there are about 40–50 enterprises operating in *environmental branch*. An accurate amount of enterprises is difficult to estimate because of disintegrated nature of business. Actually, environmental sector doesn't concentrate on any particular line of business, it consists of different kind of business sectors. There are business activities for example in water treatment and recycling, sludge treatment technologies, exhaust gas purification technologies, renewable sources of energy, recycling and consulting and research services. Know-how in environmental technology is strengthening in Oulu subregion, and the environmental cluster is one of the focuses in all regional development programmes. Environmental cluster includes in environmental technology and nature-based entrepreneurship as well as services, research and development work for them. (Elomaa et al. 2003; Ympäristöklusteri 2004.)

In Northern Ostrobothnia, *primary production* is more remarkable than on the average. In 2000, 8 % of all farms in Finland were located in Northern Ostrobothnia (Maatalouslaskenta 2001a). At the moment, there are 5 852 farms in the region, and the main lines of business in agriculture are milk and meat production and potato farming. Over 40 % of farms in the region are milk production farms, and in fact, Northern Ostrobothnia is the biggest milk production region in Finland. In addition, Northern Ostrobothnia is nationally remarkable in seed potato producing, thus the production is over 1/3 (36,6 % in 2002) from the national production. (Pohjois-Pohjanmaan luonnonvaraklusterin... 2003.) The region is locally and nationally significant in organic production too. According to Rural Barometer 2001 (Kokko & Nurkka 2001), there were 526 organic farms in Northern Ostrobothnia, which is 8 % from the cultivated area. Nationally the average is 6 %. There are more than average amount of farms in plant and beef production, horse management, accessory live-

lihood and residential farms in Northern Ostrobothnia too (Pohjois-Pohjanmaan maatilatalouden... 1999). Also small-sized food processing industry is strongly developed. There are some sub-regional differences in production, however. For example, Oulu Southern region is focused on basic food production (milk production) and upgrading, and the most remarkable seed potato producing region is located on the coast of the province.

The amount of farms has been diminished 40 % in 1990–2001 (Kokko & Nurkka 2001), which has caused the biggest decrease in employment numbers too. It has been estimated that by 2006 the number of farms will be dropped to less than 4 500. However, farm sizes have been grown almost 50 % after joining in the EU. The proportion of a new cultivated area taken into use was the biggest in Northern Ostrobothnia in 2004. (Pellon määrä lisääntyy... 2004.)

Many farmers carry on some subsidiary trade too, even if farmers in Northern Ostrobothnia have least secondary occupations outside the farm in Finland. That's because of the big amount of labour-intensive dairy cattle farms in the region. (Maatalouslaskenta 2001b.) In the studies dealing with both current and upcoming situation of farming, there has been noticed that 22 % of farms in Northern Ostrobothnia practice some other business as well. The most common fields as secondary occupation are machine contracting, wood processing and repairing of machines. Rural tourism and accommodation and restaurant services are the most interesting ones when considered future plans of the farmers. (Kokko & Nurkka 2001.)

In the sub-regions of Northern Ostrobothnia, the situation is alike. For example, in Raahe sub-region 26 % of farmers practice machine contracting, 21 % direct sale or market trade of own products and 17 % timber production as a subsidiary trade. Machine contracting and timber production are the most popular ones when asked for subsidiary livelihood in the future, but there is also some interest in metal production, tourism and accommodation business as well as activity services. (Maatalouden ja liitännäiselinkeinojen yrityskysely 2004.)

There are some other branches connected to nature-based entrepreneurship too. For example, there are 178 SMEs operating in *food industry* in Northern Ostrobothnia. One third of them are bakeries, and 16 % operates in processing other food supplies, 12 % in meat processing and slaughtering and 12 % in processing of vegetables, berries and fruits. (Ruoka-Suomi 2004.) In addition, some *arts and handicraft* enterprises can be considered as nature-based enterprises. According to Elomaa et al. (2003), there are some enterprises making gifts and utility articles from stone or wood in Northern Ostrobothnia, but the amount of them is only about 10–15 enterprises. In all, the number of handicraft enterprises is over 400, and they are emphasised to textile, clothing and furnishing business. Arts and handicrafts enterprises typically employ 1–4 employees, and many entrepreneurs have some other job as well. (Pohjois-Pohjanmaan käsi- ja taideteollisuuden... 2002.)

1.2 Development Programmes and Activities for the SMEs

Entrepreneurship has been taken for one of the main emphasis in the future regional development plans in Northern Ostrobothnia. In the *Provincial Plan of Northern Ostrobothnia* (Pohjois-Pohjanmaa... 2003b), there has been set a goal that by 2020 the region is an entrepreneurship province constituting of vital regions, Oulu as a leading centre of the region. The focus will be on the strongly developed areas of specialisation (clusters), and many-sided business structure. Information technology is going to be used as the basis for development.

There have been defined future development clusters, which are partly overlapping, and at the moment, they include half of employed in the region (Table 2). By 2009, there will developed about 10 000 new jobs in those areas of specialisation. In 2001 the biggest cluster (area of specialisation) on the basis of the amount of enterprises was the rural sector (natural resources and agriculture), and the health and wellness cluster employed most (in 2000). However, it has been estimated that the amount of employed will diminish mostly in the rural cluster by 2009. (Pohjois-Pohjanmaan talouskatsaus 2004.)

In 2005, the developmental emphasis on the provincial level is going to be especially directed to development of wood and metal industries, natural resources branch, wellness and the information society programme (Pohjois-Pohjanmaan liiton... 2004b).

There is going to be made a separate development plan, the *Entrepreneurship Programme 2010,* for developing entrepreneurship in Northern Ostrobothnia. This broad programme will implement national entrepreneurship policy and is going to be planned and realised in cooperation with economic life, authorities and education organisations. Some general means for developing entrepreneurship in the region are e.g. diversifying business activities and developing operation possibilities of SMEs by increasing research and development activities and promoting business expertise of enterprises, but development activities will be defined more concrete in this programme. (Pohjois-Pohjanmaa... 2003a; Pohjois-Pohjanmaa... 2003b.)

Table 2. *Areas of specialisation in Northern Ostrobothnia and development forecast for 2009. Source: Adapted from Pohjois-Pohjanmaan talouskatsaus (the Economic Review of Northern Ostrobothnia) September 2004.*

Area of specialisation	Enterprises	Employed	Employed	Employed
	2001	2000	Estimation 2004	Forecast 2009
electronic & telecommunication	160	11 100	9 000	13 000
software & content	780	3 000	4 000	7 500
meta	l490	10 300	9 000	11 000
food & biotechnology constructing & environmental	150	2 100	1 900	2 200
technology	1 950	14 800	15 000	15 500
health & wellness	1 000	22 500	25 000	26 000
rural (natural resources & agriculture)	6 600	10 300	9 000	7 000
wood	320	3 000	3 100	3 300
tourism	920	3 000	3 500	5 000

Special attention has been paid to developing women entrepreneurship. In 2004, Provincial Plan 2020 was completed with the *Rural Women Entrepreneurship Programme*. It's a strategy targeted to development of women entrepreneurship in the countryside, and it reaches until 2015. The aim of the Rural Women Entrepreneurship Programme is to increase and develop women entrepreneurship in the countryside with the help of advisory services, training in information searching and computer programme usage, entrepreneurship education and development of know-how, establishing incubators and cooperatives, and developing business environment. Concentrating on women entrepreneurs is regionally significant task because during the last 10 years the amount of women entrepreneurs has diminished from 9 500 to 6 000 entrepreneurs. The number of women entrepreneurs is the biggest in social and personal services, wholesale trade and health care services at the moment. However, within next decade about 1/3 of women entrepreneurs will be retired, and the biggest proportions will be in agriculture and service sector. (Pohjalaiset naiset... 2004.) This will have an effect on nature-based entrepreneurship too.

Nature-based entrepreneurship has been taken into account most clearly in developmental programmes connected to natural resources branch, environmental branch and tourism business.

There has been started the *developmental work for natural resources branch* by making a preliminary study considering current situation of the line in 2003 (Pohjois-Pohjanmaan luonnonvaraklusterin... 2003). The aim is to develop natural resources sector as a cluster, which is seen broadly. The cluster consists of agriculture and forestry, gardening, peat production, reindeer herding, game and fishery, growing berries, subsidiary trade, tourism, transportati-

on, food industry, wood and paper industry and wholesale trade. Also research in biotechnology, chemistry, information processing and geography would be a part of the cluster. The mean is to get all actors involved in developing rural sources of livelihood to continue development work in cooperation.

The focus will be directed to the strong production sectors, which means for example agriculture milk and beef production, potato farming and organic production. There have been defined sub-regional focuses based on current strengths as well:

- Koillismaa sub-ragion: nature tourism and wood processing
- Oulunkaari sub-region: environmental branch, wellness and e-rural area
- Oulu sub-region: university research, milk production, grain and potato farming
- Raahe sub-region: developing rural sources of livelihood and housing, many-sided agriculture, groundwater development
- Oulu Southern region: milk production, pig breeding, organic production, agriculture business and bioenergy usage. (Pohjois-Pohjanmaa... 2003b; Pohjois-Pohjanmaan luonnonvaraklusterin... 2003.)

Strengthening entrepreneurial know-how and developing technical applications for productive purposes are basic aims in all the development. Other goals are e.g. increasing competitiveness of traditional natural resources business, increasing degree of upgrading, finding new break-throughs with cluster cooperation and defining development lines of education and research. With many-sided natural resource development is aspired to achieve leading role in rural entrepreneurship in Finland. (Pohjois-Pohjanmaan luonnonvaraklusterin... 2003.)

Environmental branch is one of the growth industries in Northern Ostrobothnia. It is taken into account in the EU programmes like Objective 1 and 2, and in all regional developmental programmes in Northern Ostrobothnia and Oulu sub-region, for example in *Oulu Growth Agreement 2006* and *Oulu Region Centre of Expertise.*

The Oulu Growth Agreement 2006 is a strategy and action package worth 300 million Euros. With the help of the growth agreement, the city of Oulu aims to sharpen its competitiveness and strengthen its position as an internationally important centre of know-how and expertise. The Growth Agreement includes five clusters of businesses and associations along with two support organisations. The objective of the environment cluster in the region of Oulu is, by combining research and industrial activities, to become the second most important expertise cluster in the field of environment in Finland. In addition, the objective is to profile the cluster internationally. The cluster concentrates on the promotion of entrepreneurship related to environmental technology and nature-based entrepreneurship, the related services and research and development. It develops operations across the cluster borders and aims at promoting co-operation within the Growth Agreement. (Oulu 2006... 2004.) Furthermore, environmental technology is one of the focus areas of business in the Oulu Region Centre of Expertise, other focuses being telecommunications, electronics, software engineering, wellness technology and biotechnology. The Centre develops these areas of business and their operating prerequisites for creating new globally competitive products and services. (Oulun seudun... 2004.)

There are some environmental business and research networks in Northern Ostrobothnia too. *Eco Forum* is the network created by environmental engineering companies in the Oulu region. Peoples' and companies' increased environmental awareness and stricter legislation have created a demand for solutions that conserve and protect the environment. This development offers new business opportunities, which are being exploited by Eco Forum. Eco Forum also has a significant role in starting leading environmental projects under the Oulu Growth Agreement. (Eco Forum 2004.)

The University of Oulu has taken environmental line of business as an area of specialisation too. *The Northern Environmental Research Network (NorNet)* is coordinated by the university, and a project unit of environmental business, NorTech Oulu, has operated since 2002. In addition, there are going on a multidisciplinary master programme of environmental management, EnviroMaP, and doctoral level graduate school, EnviroNet. Approximately 10–15 % of all research done at the University of Oulu is connected to environmental field. In 1.1.2005 the environmental area of specialisation was joined to northern issues forming now the northern and environmental issues area of specialisation. (NorNet 2004.)

In the *Tourism Strategy for Northern Ostrobothnia* (Pohjois-Pohjanmaan matkailustrategia 2001), the province has been defined as many-sided but heterogeneous tourism region. However, nature tourism is an important part of tourism industry in the whole region. Cooperation between tourism enterprises and benefiting of information technology development (e.g. developing reservation systems and Internet portals) are mentioned as subjects for development in the strategy, for example. Entrepreneurship development has been taken into account in sub-regional tourism strategies, too.

There have been done provincial development strategies in arts and handicrafts and wood processing industries too (Pohjois-Pohjanmaan käsi- ja taideteollisuuden... 2002; Pohjoinen puutuoteteollisuus... 2002). In *arts and handicraft branch* the developmental focuses for 2002–2006 are making business profitable and creating new enterprises. The aims are e.g. to create operational environment called Bothnia Design for handicraft enterprises, improve image, raise educational and know-how level, promote operation of leading enterprises and support operation of small and starting enterprises. Bothnia Design is a network for promoting handicraft industry, and it could operate as a form of an office or portal. The network would help companies with telecommunications, acquiring and processing of information and promoting usage of new technology and network trade. It would offer advisory and information services and training too. Another concrete suggestion in the development strategy for handicraft entrepreneurship is creating of expert studios for handicraft industry. At the moment, there are some ongoing projects aiming to this. Expert studios would operate as information centres, business establishments, incubators and project accelerators. (Pohjois-Pohjanmaan käsi- ja taideteollisuuden... 2002.) The strategy for wood processing industry focuses mostly on networking and internationalisation of enterprises, but it's not emphasised more detailed here.

In *food industry,* emphasis will be put in developing active, developable and expanding companies. Operational possibilities are going to be strengthened with multidisciplinary re-

search and by utilising ICT and biotechnology innovatively in product development. Besides product development, marketing is one of the focuses in food industry development in the future. Availability of local raw materials, e.g. milk, fish, grain, potato, meat and natural products, has to be ensured. These are some of the development emphasis in the draft of Food Industry Strategy for Northern Ostrobothnia, which is in preparation at the moment. (Läänin eteläosa huomioitava... 2004.)

There are some sub-regional developmental plans for developing rural entrepreneurship in Northern Ostrobothnia too. For example, one of the developmental networks operating in the Oulu Southern regional centre is the Network of Food Production and Rural Issues. The network has decided to focus on promoting modern and competitive agriculture and primary production, using domestic energy, organic production, rural entrepreneurship, and active village development. In food production sector, there are plans for constructing a centre for logistics and marketing, raising degree of processing, raising the share of organic products and training for food production. (Oulun Eteläisen aluekeskusohjelma... 2004.) In the study done by Rural Development Services Unit of Haapajärvi Vocational Institute, there has also been proposed to establish Rural Expertise Centre at Haapajärvi, which would focus on education, research, development and incubator and advisory services in the field of natural resources. Research would be done in technologies for milk and beef production and adapting them to, and using agricultural biomass for energy production. Incubator and advice services are planned to target for farmers and agricultural machinery manufacturers. Short-term courses and consultation are already included in the services of Rural Development Services Unit. (Knuutila 2003.) At the moment, there are some rural development centres, e.g. Rural Development Center Oras in Raahe sub-region, already in operation in Northern Ostrobothnia. Expert and advisory services of them are going to be examined later on in this review.

All of these development programmes and strategies are realised through different projects. An exact amount of projects aiming for developing rural or nature-based entrepreneurship is very difficult to define, but the most of the projects funded from EAGGF and LEADER+ programmes can be considered as such. Funding for enterprises is mostly directed through Employment and Economic Development Centre or local action groups. Nature-based entrepreneurship has been especially developed by sub-regional development and education projects. Some of the ongoing projects considering rural or nature-based entrepreneurship and e-services in Northern Ostrobothnia are presented in the chapter 3.1., and in the Appendix 1.

2 SMEs and ICT

2.1 The Use of Internet and ICT in Northern Ostrobothnia

Northern Ostrobothnia is one of the top regions when considering accessibility of information society (networks, terminals and technology). For example, the basic level of broadband connections is good in the region. Accessibility will be almost 100 % by the end of 2005. There are some peripheral, low-populated areas in Koillismaa and Oulunkaari sub-regions, where broadband connections are not yet available, however. According to the bulletin of Council of Northern Ostrobothnia (Koko Pohjois-Pohjanmaa... 2004), for example in Oulunkaari sub-region there are still 45–50 villages in demand for broadband channel. In the ongoing project, there is aimed to find out where to reach the broadband, by which technology it should be realised and how to find the most economic way for networking. The aim is to construct ADSL level connection covering the whole region by 2007. In addition, there should be available at least one e-service point connected to broadband channel at every village in 2005. (Pohjois-Pohjanmaan laajakaistastrategia 2004.)

As a part of implementation of the provincial Information Society Programme and Broadband Strategy, there have been constructed sub-regional networks in Northern Ostrobothnia. Especially in Oulu sub-region broadband supply is excellent, and in addition, there has been developed wireless network for public use as well. There are some wireless networks in Ylivieska sub-region too. Also some sub-regional Internet portals have been developed (see Appendix 2). The current situation of information networks and its contents have been surveyed sub-regionally when realising Information Society Programme the 3rd Step in 2002, and sub-regional broadband accessibility is examined more closely in Pohjois-Pohjanmaan laajakaistastrategia (2004). In addition, there has been done a preliminary survey concerning residents' willingness to join in broadband network in rural villages of Oulunkaari sub-region. At least quarter of resident living in sparsely populated area would like to join in. (Pohjois-Pohjanmaan laajakaistastrategia 2004.)

At the moment, 67,4 % of households have a computer and 57,7 % have an Internet connection in Northern Ostrobothnia. That's more than on the average in Finland (64,1 % and 51,3 % respectively). On the contrary, the amount of broadband, cable-TV and wireless connections as well as mobile phones is a little bit slighter than in the whole country. In summer 2004, 25,9 % of regions' households had a broadband or corresponding connection (26,1 % in Finland) and 93,1 % had a mobile phone (94,6 % in Finland). (Kuluttajabarometri maakunnittain 2004.)

When considering enterprises, the proportions are higher. The basic survey for current situation of Internet business and e-commerce in Northern Ostrobothnia were done by Pasanen and Kalliopuska in 1998. Besides present state, there were also asked for future plans of enterprises for Internet usage, e-business, and development challenges in the survey. Even if situation has changed notably since the study, it's worth closer examination as a starting point for e-business development in the region.

In the research of Pasanen and Kalliopuska (1998), 42 % of the enterprises who responded to the survey were SMEs (under 25 employees). In all, a questionnaire was sent to 102 enterprises from different branches in Oulu, Kuusamo and Raahe regions, and 73 enterprises were also interviewed. According to the survey, Internet was used in almost every enterprise even in 1998, because only 8 % of respondents didn't use Internet at all. However, it seems that there have probably been big ICT companies included in this study, because when compared to figures in 2002 (Yritystutkimus... 2002), 83 % of SMEs (under 250 employees) had Internet connection in Northern Ostrobothnia then. In reality the amount of Internet connections hasn't decreased 1998-2002 but on the contrary increased. It can be assumed that the amount of enterprises using Internet is much higher than 83 % at the moment, because nationally the proportion was 94 % in 2003 (Internet ja sähköinen kauppa... 2003). Furthermore, it's worth noticing that there are likely more connections at ICT enterprises operating in Oulu sub-region compared to enterprises operating in some other line of business or rural area.

Enterprises which have Internet connection use ISDN modem (34 %), ADSL connection (32 %), and modem (27 %). Interest in continuous connection has been increased, however. In 2002, 27 % of companies had continuous connection in Northern Ostrobothnia (36 % in Finland). (Yritystutkimus... 2002.)

In 1998, e-mail was used in 90 % of the enterprises which participated in the study of Pasanen and Kalliopuska (1998). 76 % of the enterprises had own web-pages, and other planned to open them by 2000. Again, it seems that these numbers can't be regarded as totally reliable to describe situation in the whole province, because nationally only 58 % of all enterprises (with 5 or more employees) had own web-pages in 2003 (Internet ja sähköinen kauppa... 2003).

There isn't any provincial statistics available from the amount of computers or Internet usage of nature-based enterprises. However, Kuhmonen and Tasanto (1999) have studied interest of rural entrepreneurs in the possibilities offered by the information networks. They sent a questionnaire to 3 661 business and farm entrepreneurs in 15 municipalities neighbouring Oulu in Northern Ostrobothnia and got 681 answers. 68,9 % of respondents owned a computer and 51,1 % had an Internet connection (in 1999). Entrepreneurs were also inquired after what kind of e-services they use and what they might use via Internet, but Internet usage and functions supported by ICT are considered more detailed in the chapter 2.2.

In the research of Laru et al. (2004), rural tourism entrepreneurs in Oulunkaari and Raahe sub-regions were inquired after teleinformatic readiness and willingness for using location based services. According to the survey, 83 % of respondents have a computer with an Internet connection, 87 % have mobile phone and 8 % are owners of intelligent terminal or communicator. 15 % of enterprises informed that they use location based services, but at the moment they are mostly confined to map services in Internet. There is a growing interest in using location based and mobile services among rural tourism entrepreneurs, for 59 % of them think that mobile services are going to become general in the future.

In 2001, 65 % of the farmers had a computer and 53 % had an Internet connection (Kokko & Nurkka 2001). Now when broadband connections are becoming more common in rural areas too, the proportion of farmers having a computer and Internet connection is doubtless higher. Broadband connection brings cost savings and makes new ways of action for farmers. Using e-services are becoming daily routine for many of rural entrepreneurs. (Pohjois-Pohjanmaan laajakaistastrategia 2004.)

2.2 Functions Supported by ICT in the SMEs and Benefits of ICT

Enterprises use ICT quite broadly in business nowadays. In 1998, the most used functions of the Internet were communication tool (e-mail) and information search (both 83 %). As can be seen from the Table 3, Internet usage has mostly been passive and emphasised to informative matters. Interactive usage as well as e-commerce weren't so widespread among the enterprises in 1998, however. (Pasanen & Kalliopuska 1998.) In their study concerning Internet and e-service usage of rural entrepreneurs, Kuhmonen and Tasanto (1999) found out that banking services, information searching and free-time services were the most interesting and the most used services for rural entrepreneurs, and there was some interest in e-commerce too. On the contrary, business services, advising and trading services connected to business were usually handled by phone instead of using e-services. It's worth noticing, that in 1999 availability of e-services and know-how for using them have probably been on much lower level than today.

Table 3. *Internet usage of the enterprises (n = 100) in Oulu, Kuusamo and Raahe regions in 1998. Source: Adapted from Pasanen & Kalliopuska 1998, Taulukko 6.*

As communication tool	83 %	Taking care of payments traffic	29 %
Searching of information	83 %	Offering possibilities to order products	29 %
Presentation of the company	74 %	Buying products and services	28 %
Surfing	61 %	Recruiting	19 %
Offering product information	58 %	Selling products via the Internet	16 %
Getting feedback	49 %	Offering support services	16 %
External information	47 %	Don't use Internet at all	8 %
Advertising	44 %	Management of store and delivery	4 %
Internal information	31 %	Other	2 %

Situation is alike today and therefore SMEs still use Internet mostly for e-mail and information search (Yritystutkimus... 2002). Internet is an important tool for marketing too, especially when location of an enterprise is peripheral. However, many nature-based entrepreneurs haven't enough know-how and experience of marketing via Internet, which can be seen e.g. as poorly-done or non-updated web-pages of the enterprise. Nowadays home pages of SMEs and Internet are more often main channels in marketing, so that's why some SMEs have invested in home pages and contracted to media experts for making of them. In

addition, e-mail is used for marketing to regular customers, as many nature tourism enterprises do (Merilä & Vähä 2003).

In her research, Mikkonen (2000) examined nature tourism services targeted to business customers in Oulu sub-region. Business customers use Internet for searching for information on services, and they would like to buy tourism products and services via Internet too. Since 2000 e-business has increased for example in tourism sector, e.g. online reservations via Internet have become more general. Nevertheless, many small nature-based enterprises still handle reservations more traditional way. Among the enterprises which responded to the survey of Laru et al. (2004), reservations are made by phone or by mail, and more often by e-mail too. Only 4 of those enterprises have reservation system available in Internet or they are soon getting it there. However, enterprises think that e-business offers some growth possibilities, cost savings and competition advantages for business. It also changes operations models inside the company and in entire branch, and makes logistics more effective. New products and services have been created as well. (Pasanen & Kalliopuska 1998.)

Availability of good network connections is prerequisite for remote working. Also business culture and methods used in companies affect if it's possible to work remote or not. In 2003, remote work was done in the fifth (21 %) of the SMEs in Northern Ostrobothnia, and 10 % of the enterprises were planning for introducing or extending remote work. When examining different branches, remote work was mostly done in business services (53 %) and least in personal services and trade (12 and 13 %). Same branches are standing out when considering increasing or reducing of remote work. When compared to national numbers, employees of the SMEs in Northern Ostrobothnia clearly do less remote work than nationally (25 % of SMEs in Finland). (Pk-yritysten toimintaympäristö... 2003.) In agriculture, remote work interests one fifth of farms, which is less than for example in Southern Finland (Kokko & Nurkka 2001).

As already mentioned, utilising mobile and location based services in business interests many SMEs for instance in tourism sector. In Northern Ostrobothnia there has been developed some mobile services like mobile fishing licence, which serve tourists and could be used by nature-based entrepreneurs as well. These services are presented as examples in the chapter 3.1.

2.3 Barriers of the ICT Utilisation

According to SME barometer (Pk-yritysbarometri... 2004), difficult competition situation and general economic situation seem to be the strongest obstacles for development of SMEs in the region. When considering ICT usage of enterprises, there are many threats, real or imagined ones, experienced by enterprises. In the study of Pasanen and Kalliopuska (1998), enterprises felt information security as the biggest threat in e-business. Increase in competition, appearing of new competitors to home markets, changes in the original products and traditional business ways were also considered as threats for some companies. Sometimes customers not being ready for the service may be threat as well. In the Table 4, there are

listed some factors which entrepreneurs feel are slowing when starting or extending e-business.

Table 4. *Factors mentioned by entrepreneurs as slowing when starting or extending e-business. Source: Adapted from Pasanen and Kalliopuska 1998, Taulukko 8.*

	Significant or very significant	**Little or not significant at all**
General business manners of the branch	66 %	34 %
Future brings additional information on information network business	68 %	32 %
Uncertainty from benefits deriving from information network business	63 %	37 %
Method of payment in e-business	54 %	46 %
Learning time for using networks	47 %	53 %
Uncertainty of running costs in the future	40 %	60 %
Being with e-business includes risks	33 %	67 %
Running costs	37 %	63 %
Investment costs	36 %	64 %
Condition of nowadays legislation	32 %	68 %

In addition to barriers experienced by enterprises, there are also some infrastructural barriers for ICT usage in Northern Ostrobothnia. As mentioned, broadband connections don't yet cover whole province. Situation is going to become better in the near future, however. There are still some challenges connected to broadband connections, like how users adopt e-services and how to keep e-services profitable. Costs might also become obstacles for someone, but one aim of the provincial Broadband Strategy is to ensure reasonable prices for sparsely populated areas. Using Internet should cost as much in the countryside as in population centres. Operators in cooperation with municipalities are making it possible for peripheral areas to get in connection too, but there will be needed some state subsidies in constructing of network, because connection for one village costs about 10 000 Euros (Koko Pohjois-Pohjanmaa... 2004). (Pohjois-Pohjanmaan laajakaistastrategia 2004.)

Marketing is often mentioned as some of the most wanted cooperation fields for SMEs. When planning marketing operations and constructing of common web-pages, for example, it's important to notice that SMEs are not usually ready for investing very much in them. In the survey of Laru et al. (2004), rural tourism enterprises kept common marketing as the most significant subject in developing mobile services. However, majority of the enterprises estimated that they could invest for marketing and maintenance of map service only 20–30 Euros per year. For a hypothetic new location based service developed from the basis of existing map service, the entrepreneurs would be ready to pay 20–40 Euros annually. One reason for small amount of investments might be a number of different development pro-

jects, in which enterprises are asked for to participate in. Especially in some tourist destinations enterprises may not participate in projects because of they think projects don't fill demands or are too expensive for micro-sized enterprises.

Another barrier for ICT utilisation in SMEs may be entrepreneurs' educational level. The most of the nature-based entrepreneurs are self-educated which means they haven't got any or have got only some education in the field. However, they may have business experience from another field. For example, farmers have clearly lower education in Northern Ostrobothnia than in Southern Finland. One fourth of farmers have vocational education connected to agriculture in Northern Ostrobothnia, whereas in Southern Finland almost half of the farmers have vocational qualification in agriculture. In Northern Ostrobothnia the greatest demand for further education seems to consider EU subsidies, basic skills for ADP, Internet usage and bookkeeping. (Kokko & Nurkka 2001.)

2.4 Policy Support and Steering of the Use of ICT in the SMEs in the Region

Information society and developmental activities regarding it have been taken into account as cross-sectional theme in the provincial development programmes (e.g. Pohjois-Pohjanmaa... 2003b). The first Information Society Strategy of Northern Ostrobothnia was drawn up in 1999–2000. It has been implemented through *Information Society Programme called the 3rd Step* in 2000–2006. At the beginning of the programme, information society consciousness and accessibility were promoted. Also development of e-services and processes connected to them were emphasised, and writing up e-strategies for each regional centre region was started. In addition, there have been realised and coordinated many information society projects aiming at creating new network operations models, developing e-services, opening thematic portals, or improving infrastructure of networks. The emphasis of the Innovative Operations Programme, which was implemented in 2002–2004 in Northern Finland, was mainly directed to developing services and applications for tourism and citizens' well-being (Pohjois-Suomen... 2004). (3. askel... 2000; e-Askel... 2003.)

In 2004 there was started a new Information Society Programme of Northern Ostrobothnia for 2004–2006. It continues the former work, and the goals are the same, that is to promote and coordinate information society development at provincial level. The focuses of the programme are promoting supply and accessibility of e-services and upraising know-how level. In the first phase, there will be found out current situation and sub-regional focuses of e-services, then regional roles are being decided on the basis of specialisation and distribution of work. There are plans for creating new implementation programme for Northern Finland, and new projects are going to be started too. (Pohjois-Pohjanmaan tietoyhteiskuntaohjelma 2004; Pohjois-Pohjanmaa... 2003b.) The Information Society Programme is going to be realised at regional centres and sub-regional level, where sub-regional e-strategies are guiding information society development. For example, for Oulu Southern and Raahe regional centres the strategy was done in 2002. The main goals in it are e.g. getting equal services for citizens, improving possibilities for using e-services, improving e-know-how, and

realising common information service projects. Emphasis in entrepreneurship is in developing e-business, content production and e-logistics. For strategy implementation, there has been founded a company by municipalities for administrating sub-regional portal and developing e-services in the region of these two regional centres. (e-Askel... 2003.)

In the Provincial Plan 2020 (Pohjois-Pohjanmaa... 2003b), there has been set a goal for getting Northern Ostrobothnia as one of the Europe's leading regions in wireless information society development. One step on the way for reaching this target is enabling broadband connections for everybody. In 2004, there has been done a provincial *Broadband Strategy* by the Council of Northern Ostrobothnia (Pohjois-Pohjanmaan laajakaistastrategia 2004). Besides reaching a broadband channel to the whole region, the goals of the Broadband Strategy are developing new technology pilots, ensuring reasonable prices in rural and peripheral regions too, taking broadband connections into consideration in infrastructure planning, and developing e-services. The strategy is a part of national broadband strategy and information society programme of Northern Ostrobothnia. Recently there has been started drawing up the provincial e-Service Strategy, which completes the Broadband Strategy. Infrastructure and service packages (information services, services for everyday life, interactive special services) will be defined in it sub-regionally. (ePalveluStrategia 2005.)

In addition, production and development of information society services has been emphasised as one of the main goals in the Regional Centre Programme of Koillis-Suomi and Naturpolis Kuusamo Development Programme. The aim is to strengthen possibilities of Koillis-Suomi region centre as a production area of support and educational services and public information society services. Research and development is also important. Kuusamo (and Koillis-Suomi) is a well-known tourism region, and the aim of the programmes is to develop the region by making it an international tourism region and a centre of expertise in information society service production. E-services are going to be produced for both inhabitants and tourists. Creating of this service centre is one of the mega projects in Northern Ostrobothnia and is taken into account in the Provincial Programme as well (Pohjois-Pohjanmaa... 2003a). At the moment, there is sub-regional information network available, and the operation of call centre and help desk has been started in Koillis-Suomi. (Koillis-Suomen... 2004; Naturpolis Kuusamo... 2000.) The main areas of the activities are the help desk services of enterprises in the field of information technology, customer service and sales activities that are carried out by telephone especially in tourism sector, and customer service and telephone switchboard services of the partnership companies (TVC24 2000).

When examining local development projects promoting the progress of information society in rural areas of Finland, there is accurate information available. For example, according to Vuorio & Yli-Viikari (2004), in the period 1995–1999 there were 11 EAGGF funded information society projects going on in Northern Ostrobothia (97 in Finland), and in 2000–2006 the amount had increased to 27 projects (246 in Finland). The proportion of information society project funding of all EAGGF project funding was 6 % in Northern Ostrobothnia (9 % in Finland) in 2000–2006, which is worth 1,1 million Euros.

3 SMEs and e-Services

3.1 Existing e-Expert Services in Northern Ostrobothnia

There are plenty of expert services for SMEs in Northern Ostrobothnia. Many national expert service organisations, e.g. ProAgria Rural Advisory Center, Agrifood Research Finland and Employment and Economic Development Centre, operate regionally too. In addition, there are some regional expert services in Northern Ostrobothnia. There has also been developed some e-expert services, even if most of the services seem to be still offered face-to-face or by phone. The most significant expert service organisations have an Internet pages, but they usually include in mostly informational material, like introduction of services, contact information and an electronic feedback form. Interactive web-pages are not so common to find. (e-)Expert services for SMEs are listed with a short description in the Appendix 2. In addition, some services are going to be introduced below as an example.

Employment and Economic Development Centre for Northern Ostrobothnia is a remarkable information producer and advisor too. For example, in eEnnakointi *(e-Foresight)* project, which finished at the end of 2004, there have been developed and tested electronic methods for acquiring information. The primary objective was to develop a regional action model for foresight to be used in regional development organisations. Another goal was to use information networks to anticipate, transmit and utilise foresight information. In addition, electronic participation of and interaction with citizens and different interest groups were developed and tested. The foresight information produced in the project is shared mainly through the Regional Foresight Information System on the Internet (e-service called eEnnakointi.fi). (eEnnakointi... 2004.)

Another finished project considered here is eKoillis-Suomi project (e-Koillis-Suomi... 2004), which came to the end in June 2004. It was a development project realised in Koillismaa and Oulunkaari sub-regions. The aims were to create different electronic services for everyday life and develop service centre model for information society. There were developed some e-service pilots in the project, e.g. Internet environment called auvo.net (http://www.auvo.net), which consists of e-library, e-school, e-health service, e-forms (for farmers, for example), electronic maps, questionnaire and charge-free support service. Oulunkaari sub-region concentrated in developing rural entrepreneurship and rural e-services in the project. For example, there was developed an e-form service for farmers and it was tested in the municipality of Yli-Ii. A pilot phase lasted until June 2004 and it was possible for farmers to fill in different forms related to rural entrepreneurship (e.g. an annual holiday application, an application for substitutes or an application for compensation) and sent them to the municipal substitute service office via Internet. This pilot service was developed on the basis of demand surveys of rural entrepreneurship e-services carried out in Oulunkaari sub-region. (Yli-Iissä käynnistetään... 2004.)

In 2003, Kauppinen and Savolainen (2003) examined the present state of e-services on the Internet aimed at rural entrepreneurs in Oulunkaari sub-region. The survey was done as a part of eKoillis-Suomi project too. Kauppinen and Savolainen made short descriptions of

Finnish interactive e-services for rural entrepreneurs in Oulunkaari sub-region. The descriptions included the Internet address and contents, information about the provider and technical creator and contact information of the services. They found 72 e-services and made on the basis of them a plan for a virtual library for rural entrepreneurs. The virtual library would consists of useful e-services pulled together, e.g. links to good information services, descriptions, subject headings, grouping material according to branches and alphabetical order, search engine, instructions for users and feedback possibilities. The virtual library isn't in a public use, however.

Kauppinen and Savolainen (2003) also noticed that there is plenty of material for rural entrepreneurs on the Internet but it mainly includes only information. That was a conclusion in this regional literature review as well. Most of the e-services for rural entrepreneurs found by Kauppinen and Savolainen were online stores provided by companies. Also electronic forms, like feedback or contact forms were found. Municipalities and government provided only a few interactive e-services in Oulunkaari sub-region in 2003.

An interesting example of a new, innovative e-service for farmers is an application called Maajussin Notepad *(Farmer's Notepad).* It was developed in Octobus Mobile Application Contest in 2004 by students of Oulu Polytechnic. This application is planned for helping farmer's follow-up work. With Maajussin Notepad, farmers are able to store activities defined in EU-directives to the mobile phones database in real time by each cultivated segment. The farmer can also send the information straight away to an accountant or EU-officials. The service hasn't yet been commercialised, but as a winner of the competition, it has a chance to become commercialised product too. (Farmer application... 2004.)

Another e-service, which has a point of contact with nature-based entrepreneurship is mobile fishing licence developed in cooperation with the city of Oulu and ICT companies. This innovative e-service has been in use in Oulu inland water areas during summer 2003 and 2004, and fishers have been satisfied with it. A fishing licence can be ordered to mobile phone via text message, and it is charged in the next phone bill. It's possible for inspector to check the licence via his mobile phone without being in personal contact to the fisher. In 2003 when the licence was introduced, there were sold over 50 % more fishing licences for Oulu water areas than a year before. 40 % of all 2 356 sold fishing licences were mobile ones. (Mobiili Kalastuslupa... 2003.)

A new e-expert service for entrepreneurs is E-Biz Net, the service network for e-business. It has been developed in the project managed by Central Ostrobothnia Polytechnic and designed for entrepreneurs and students who need information on e-business. E-Biz Net consists of information on courses and educational organisations offering training in e-services, e-learning material, other educational information and links. The service is partly unfinished at the moment, but there are coming up e.g. a list of entrepreneurs and service providers, latest news and some entertainment services too. (E-Biz Net -palveluverkosto 2004.)

There has been developed an information service for entrepreneurs and associations operating in the environmental line of business too. The service was tested in 2003 by five enter-

prises and it was taken into use in 2004. The environmental information service includes e.g. information on markets, environmental regulation and environmental licence decisions. At the moment, it's a part of Ecopark Oulu, the service network for product testing in environmental technology. It supports environmental technology enterprises in product development and product testing by networking enterprises, experts, laboratories and public organisations offering testing grounds and environmental services. The new web-pages were launched at the end of 2004, and there are available e.g. lists of service providers and product testing grounds. The information service can't be used via Internet, however. (Ecopark Oulu 2004.)

3.2 Advisory, Supporting and Education Services in the Region

Many expert organisations mentioned above offer advisory and educational services as well. Almost all of the advisory organisations listed in the Appendix 3 could be regarded as expert organisations too, but in this literature review there has been done partly artificial division between expert and advisory services on the basis of information producing and availability of e-services. There can also be found many sub-regional advisors, like sub-regional development centres or local action groups, which are probably the first contacts for entrepreneurs when some advisory services are needed. Tax offices, register offices and entrepreneur associations operate on sub-regional level too, and in addition, e.g. Rural Advisory Center, Employment and Economic Development Centre and Jobs and Societies have sub-regional offices.

There are over 20 youth and adult education organisations in Northern Ostrobothnia, which organise education for vocational qualifications or degrees of natural resources, environmental issues or rural entrepreneurship (see Appendix 3). Qualifications in the other lines of business connected to nature-based entrepreneurship, like catering and restaurant services or crafts and design, are not included in this listing unless they are strongly connected to tourism development or natural product line. In addition, it's possible to get entrepreneurial qualifications in commercial schools and corresponding educational organisations, but they are excluded here, just like qualifications in ICT. Besides participating in education leading for vocational qualifications or degrees, there are plenty of different short-term courses and supplementary education available for nature-based entrepreneurs. Some of those courses organised by educational organisations mentioned above are listed in the Appendix 3 too. However, more and more training is organised in context of various projects. Managing director training for rural entrepreneurs, courses for starting enterprise or cooperative, environmental entrepreneurship training, hygiene know-how (hygiene certificate) training and special courses for using e-mail or making Internet pages, are some examples of education programmes and short-term courses implemented during different projects in Northern Ostrobothnia.

Business incubators are good examples of organisations, which offer many-sided advisory, support and training services for SMEs. In Northern Ostrobothnia, there are both general (multi-branch) and one-branch incubators. For example, Start Business Center and Start

Business Net in Oulu sub-region are both incubators for starting, young companies or companies with new business ideas, and they are for all industry segments. However, at the moment enterprises in Start Business Center are mostly ICT enterprises, and in Start Business Net handicraft enterprises. Start Business Net differs from Start Business Center being a network incubator allowing enterprises locate anywhere in Oulu sub-region. In November 2004, there were 21 enterprises (and 3 coming up) in Start Business Center and 17 in Start Business Net. (Start Business Center... 2004; Ouluseutu Yrityspalveluiden... 2004.)

Again, three incubators are operating in Oulu Southern region, in Ylivieska, Nivala and Haapavesi. They are multi-branch incubators too, but emphasis on high technology has been as requirement for enterprises locating there. The incubator in Ylivieska is mostly concentrated to development of ICT, mechanical wood and metal industries in Ylivieska sub-region, and there are 5 enterprises operating in it, one of the enterprises researching biogases (Vesisenaho 2004). In connection with this incubator, there has been established a pre-incubator for students of Ylivieska Unit of Central Ostrobothnia Polytechnic. Furthermore, multi-branch incubators in Nivala and Haapavesi (in Nivala-Haapajärvi and Siikalatva sub-regions) operate as projects. In Haapavesi operation has just begun, and emphasis is in ICT enterprises. There has also been prepared starting operation of a service sector incubator in Oulu Southern region, either in connection to one of the existing incubators or as a new one. (Haapakoski 2004.)

There are only two incubators focusing on rural entrepreneurship in Finland, and one of them is locating in Northern Ostrobothnia, in Raahe sub-region. Actually, Ruukki Werstas includes two incubators, that are digital incubator for content production and ICT, and rural incubator. The rural incubator started its operation in spring 2004, and one wood processing enterprise has been settled itself there. Nine enterprises operate in the digital incubator. The aim of the rural incubator is to promote rural entrepreneurship and develop, strengthen and diversify subsidiary occupations of farming. The incubator organises training for starting enterprises, and until September 2004, 90 persons had already participated in courses. In addition, about 20 new enterprises have already been established on the basis of training offered by the incubator. At the moment, a new training programme is just starting with 23 study days. (Ruukki Werstas 2004; Junnonaho 2004.)

Some ongoing projects are aiming at creating an incubator, too. For example, TAITOTALLI project aspires to starting incubator operation in the branch of arts and handicrafts in Oulu Southern region (TAITOTALLI... 2004). As one explanation for great interest in starting incubators might be that transforming from the expert (hobbyer) to the entrepreneur is often felt difficult, and there are needed some advisory and support services for it (Pohjois-Pohjanmaan käsi- ja taideteollisuuden... 2002). Incubators and especially pre-incubators make it possible to test entrepreneurship before establishing an enterprise, too.

3.3 The use of Expert and Advisory Services by SMEs

In the survey concerning SMEs' operational environment and future development sights (Pk-yritysten... 2003), there was inquired after how familiar entrepreneurs are with operation, products and services offered by expert and advisory organisations. The results are shown in Table 5. Compared to national figures, SMEs in Northern Ostrobothnia have used services of Employment and Economic Development Centre, municipal trade promoters, public adult education organisations and private consultants and education organisations more than average during the previous year. On the other hand, services of Chambers of Commerce and Jobs and Societies have been used less. Services of Finpro, Tekes and Chambers of Commerce seem to be the most unknown for SMEs in the region when compared to answers of all respondents.

Table 5. *Do you know operation, products and services of the following organisations? The first number = respondents in Northern Ostrobothnia (229), the number in brackets = all respondents (4061). Source: Adapted from Pk-yritysten toimintaympäristö ja kehitysnäkymät 2003.*

Organisation	Knows, has used/ has been business with during last year (%)	Knows, hasn't used/ hasn't been business with during last year (%)	Doesn't know at all (%)
Employment and Economic Development Centre	26 (21)	31 (33)	44 (47)
Tekes	6 (6)	18 (25)	76 (69)
Finpro	3 (3)	6 (13)	91 (84)
Finnvera	19 (16)	34 (29)	48 (55)
Municipal trade promoters	22 (14)	35 (31)	43 (55)
Development companies of municipalities/ sub-regions	8 (8)	24 (15)	68 (78)
Confederation of Finnish Industry and Employers & Employers' Confederation of Service Industries	13 (12)	20 (17)	67 (71)
Chambers of Commerce	7 (14)	19 (25)	74 (61)
Federation of Finnish Enterprises	36 (36)	32 (32)	32 (31)
Investment companies	8 (7)	11 (16)	81 (77)
Universities	13 (12)	19 (18)	69 (70)
Polytechnics	14 (15)	20 (17)	66 (68)
Other public adult education organisations	18 (15)	21 (21)	61 (64)
Private consultants and education organisations	23 (19)	20 (22)	57 (59)
Jobs and Societies	1 (3)	10 (10)	89 (88)

In the study of Pasanen and Kalliopuska (1998), SMEs were inquired after where they would like to get help for developing e-business. 71 % of respondents though they might need assistance of Internet service providers, and half of the enterprises would use ICT companies, own organisation or operators as help. 39 % of them would use consultancy services, 26 % other educational organisations and 16 % of the respondents financiers.

When considering nature-based enterprises, there have to be taken into account organisations like ProAgria Rural Advisory Center and Rural Women's Advisory Organisation, and many other organisations offering branch-specific expert and advisory services. For example, Rural Women's Advisory Organisation in Oulu organises training and offers advisory and planning services for enterprises operating in the field of rural tourism, food services, food product processing and natural products. In 2003, Rural Women's Advisory Organisation in Oulu arranged over 160 different courses, and about 3 320 women participated in them. For example, a certificate from hygiene know-how was given to 1 400 women. In addition, there were done almost 300 different plans and consultancy for enterprises. (Oulun maa- ja kotitalousnaisten... 2004.) Furthermore, 94 % from organic farmers who answered the survey of Hintsala & Saarimaa (2000) had participated in education concerning with organic production. For 52 % of them the trainer was Rural Advisory Center in Oulu and for others e.g. rural educational organisations, Employment and Economic Development Centre for Northern Ostrobothnia, Luomu-Liitto (Organic Council) or some local organic association.

According to different studies, SME's look for advisory or financing support for business activities quite rarely. Financial support is applied for when needed but advisory services are hardly known. Merilä and Vähä (2003) noticed when they were interviewing nature tourism entrepreneurs for their study, that entrepreneurs could hardly name any organisation where to find advising. The problem seems to be that expert services are often scattered, nature-based entrepreneurship is a new branch and there are many sub-fields requiring special skills. It's not so obvious, from where entrepreneurs get the exact information they need.

However, most of the farmers (85,6 %), for example, had got organic advisory and expert services from Rural Advisory Center in Oulu, as Hintsala and Saarimaa (2000) found out. Almost half of the farmers (43,4 %) had used services 2–4 times a year, and according to advisors, farmers need mostly assistance on making cropping plans and rotation. On the other hand, if examining arts and handicraft entrepreneurs in Northern Ostrobothnia, most of them have participated in training, but only one third of them has used business services. The services of Craft and Arts Association and Employment and Economic Development Centre have been used most. Nevertheless, over 50 % of arts and handicraft entrepreneurs have used financial services, like bank loans and public financing. (Pohjois-Pohjanmaan käsi- ja taideteollisuuden... 2002.)

In the research of Kuhmonen and Tasanto (1999), 21,6 % of rural entrepreneurs who responded mentioned that they don't use any expert or advisory services at all. However, 38,2 % might use them via Internet. Lack of experience and education as well as difficulties in organising the delivery of products were seen as obstacle to selling products and services and doing marketing in Internet.

3.4 Attitudes towards, Images of and Trust to the Expert and Advisory Services

According to SME barometer (Pk-yritysbarometri... 2004), SMEs in Northern Ostrobothnia are satisfied with comfortable living environment, transportation network and social security services. More satisfied than average SMEs are with cooperation with municipalities, availability of employees and trade policy. Training supply, cooperation between companies, competitiveness of location and availability of subcontractors are the biggest reasons for dissatisfaction. Private and public business services pleased slightly less SMEs in Northern Ostrobothnia than nationally. Private business services were considered superior to public ones. However, 40 % of respondents found that public business services are rather good. There weren't examined attitudes towards e-services separately from personal services in this survey.

In the research considering SMEs' operational environment and developmental scenarios in 2003 (Pk-yritysten toimintaympäristö... 2003), there were also asked for opinions of SMEs for familiarity and the service image of Employment and Economic Development Centres. The results were quite similar both nationally and in Northern Ostrobothnia, thus 42 % of SMEs operating in Northern Ostrobothnia graded Employment and Economic Development Centre for 8 and 10 % for 9 (respectively 41 % and 12 % nationally), classification being from 4 to 10.

According to Rutanen and Luostarinen (2000), nature-based entrepreneurs keep atmosphere and willingness for cooperation inside the line good in Northern Ostrobothnia. Also operational environment was considered good, especially in regions where nature-based enterprises have operated a long time. Nature-based entrepreneurship is seen as one of the strengths and identity constructor in the region.

In their study, Hintsala and Saarimaa (2000) examined how satisfied farmers were with available advisory and controlling services in Northern Ostrobothia. The survey was done in 1999 for 163 organic farmers as well as seven advisors and inspectors of Oulu Rural Advisory Center. Farmers were mostly satisfied with education, advisory and controlling services considering organic farming. The most satisfied (74 %) with education were farmers in dairy, meat, grain and mixed farms. 31 % from farmers were very satisfied and 47,6 % partly satisfied with advisory services. There was dissatisfaction with transferring information, lack of special advisory and practical skills of advisors as well as expensiveness of advisory and controlling services. Advisors and inspectors mentioned lack of knowledge about organic farming, part-time employments and seasonal variations of advising and controlling as problems. However, there wasn't any mention about e-services in the research so satisfaction with advisory and controlling services discussed here consist of personal, face-to-face services. Personal contact is important in advising services and it seems that e-services can't replace it totally.

Expectations for e-business in the future have been quite positive in different studies. In the study of Pasanen and Kalliopuska (1998), general attitudes towards developing e-business were also positive and realistic. E-business is developed when it clearly gives additional value for the enterprise.

4 ICT Know-How of the SMEs and Challenges in Development of Knowledge

As it can be seen from the surveys presented here, the amount of computers and other devices, Internet usage, and e-business have been increased in Northern Ostrobothnia during the past five years. This has become possible because of e.g. technological development, improved ICT skills and better infrastructure. Northern Ostrobothnia is known as the region of high technology and ICT expertise, and possibilities of technology have been noticed by SMEs in different lines of business. Interest in e-business, mobile services etc. have become more general in business activities among nature-based entrepreneurs too, when benefits of them have been discovered and ICT usage has become a part of daily routines for many enterprises. However, there is still a lot to develop when considering content and service production and availability of e-services, even if many interesting and innovative service pilots have already launched successfully.

The situation in the countryside compared to Oulu is different, however. Broadband connections and wireless technology haven't yet reached the whole province, and most of the ICT companies just like environmental technology enterprises are located near Oulu. The radiant effect of Oulu in ICT expertise should be reached to other lines of business and rural areas as well. There are already many good examples and plans for realising this, for instance in Oulu sub-region and in Koillis-Suomi regional centre. In addition, there has been outlined in the Preliminary Plan for natural resources line development (Pohjois-Pohjanmaan luonnonvaraklusterin... 2003) that entrepreneurship is going to be developed in the boundary surface of environmental technology, biotechnology and ICT, all of which are growing industries in Northern Ostrobothnia and especially in Oulu sub-region. By doing this there are new possibilities for cooperation and developing of new products and services.

In the Provincial Development Programme of Northern Ostrobothnia (Pohjois-Pohjanmaa... 2003a), there have been listed some means for general development of entrepreneurship in the province. For example, re-making teaching plans for schools, attitude shaping, support networks for starting businesses, financial and taxation activities, and activities in social security are required for promoting entrepreneurship. Strengthening of the operation of new enterprises can be promoted by increasing testing and advisory services for new business ideas, incubator services, financial services and social network of companies. The main focus in the development programme is to develop active enterprises.

In the Rural Women Entrepreneurship Programme, there have been given some suggestions for developing business environment. They are e.g. activating advisory services and reaching them also to peripheral areas (with the help of circulating advisory busses, for example), developing network connections and developing computer programmes, portals and Internet pages more suitable for women entrepreneurs. (Pohjalaiset naiset... 2004.) The implementation of the programme has just started as a coordination project by Rural Advisory Center and Rural Women's Advisory Organisation in Oulu.

In the natural resources cluster in Northern Ostrobothnia, the focus areas for development are e.g. improving conditions for entrepreneurship, changes of generation, advisory, financing and support services, and development of cooperation networks. Rural entrepreneurship is one of the research subjects. Focuses in education are for example entrepreneurship, business and marketing. There is need for well-educated entrepreneurs because of structural change, changes in generation and new company forms in the region. Agriculture is seen as the basis for entrepreneurship, but the aim is to create many-sided natural resources entrepreneurship in the whole province. Also influence of Oulu has to be extended to natural resources field. (Pohjois-Pohjanmaan luonnonvaraklusterin... 2003.)

According to SME barometer (Pk-yritysbarometri... 2004), SMEs' in Northern Ostrobothnia seem to have highest development demands for marketing and sale as well as human resources development and training (Table 6). In the survey, 15 % of respondents think they need training for production and material functions, information technology, product development and quality. Compared to national figures, demand for human resources development and training, production and material functions, information technology, product development and quality are bigger in Northern Ostrobothnia than nationally. In general, SMEs in Northern Ostrobothnia intend to invest mostly for production and material functions, information technology, product development and quality, and sales and marketing in the near future (Pk-yritysten toimintaympäristö... 2003). These are usually mentioned as the most important issues for development regardless of the line of business.

Table 6. *Development demands of SMEs in Northern Ostrobothnia and Finland in August 2004. Source: Adapted from Pk-yritysbarometri, Pohjois-Pohjanmaa, 2/2004, Taulukko 4.*

	Northern Ostrobothnia (%)	**Finland (%)**
Management	4	4
Human resources development and training	23	19
Marketing and sale	31	33
Export and internationalisation	2	3
Financing, economy and accounting	6	4
Production and material functions, information technology, product development, quality	15	13
Cooperation/ networking, subcontracting	9	13
Taking into consideration environmental and other regulation demands in operation	3	2
Other	0	1
No developmental needs/ Can't say	7	9

For nature-based entrepreneurs, continuing processing, customer-based product development, cooperation, informing and marketing are the most important developmental issues. Know-how, customer service, quality and environmental attitude were also mentioned in the research of Rutanen & Luostarinen (2002). Nature-based tourism, natural product line and small-scaled wood processing were seen as focus areas. Besides same issues, interviewees in the preliminary survey concerning current situation and developmental demands for nature-based entrepreneurship in Northern Ostrobothnia (see Elomaa et al. 2003) emphasised gaining financing, partnership, and utilising of the Internet in business. For example, product sales and marketing could be developed by creating of provincial reservation system.

In November 2002, University of Oulu (NorTech Oulu and Oulu Southern Institute) and the School of Renewable Natural Resources in Oulu Polytechnic organised a seminar considering nature-based entrepreneurship as business in Northern Ostrobothnia. It was a part of the preliminary survey. There were more than 100 participants in the seminar, thus there seems to have a great interest in developing nature-based entrepreneurship in the region. During the seminar, Suonpää (2003) made as a part of her thesis the survey from the development of nature-based entrepreneurship and demand for nature-based products and services for participants. 32 respondents considered cooperation and quality (and lack of them) as the biggest challenge in nature-based entrepreneurship. Marketing, distances, small-scale entrepreneurship, technology and nature were also mentioned as challenges. Respondents also highlighted the need for an extensive information and marketing channel, so called marketing house, which should cross provincial borders. In addition, image of technological expertise of Northern Ostrobothnia should be developed and exploited in nature-based entrepreneurship. As proposals for action were mentioned networking, education, coordination, paying attention to entrepreneurship, grading and making a strategy for the field.

In nature-based entrepreneurship, there is lack of professional skills because of many entrepreneurs have started business on the basis of a hobby. For example, most of the farmers in Northern Ostrobothnia haven't got vocational education in agriculture or subsidiary lines of business (Kokko & Nurkka 2001). Non-professional character of nature-based entrepreneurship should be eliminated and according to Elomaa et al. (2003), this could be done by developing education in all educational levels. In the study of Merilä and Vähä (2003), half of the interviewees mentioned that there is plenty of basic education on offer, but what they really need is the tailor-made education (niche education). Many projects organise subsidiary education as a form of short-term courses, which is considered useful. However, education is sometimes unclear and too general, which seems to be much because of entrepreneurs have different basic skills. In addition, some of courses are too expensive for SMEs.

Educational demands have been examined in almost every study considering development of entrepreneurship. Some of those studies are referred in the following.

Most of the farmers are quite accustomed to use computers and Internet as a help of daily routines. However, 16 % of farmers who responded to the survey of Kokko and Nurkka (2001) would need training for basic skills in ADP, 10 % for bookkeeping, and 9 % for Internet usage. In addition, 18 % of respondents would like to have training considering the EU issues. Furthermore, in spring 2004 the Rural Development Center Oras realised in conjunction with Raahe sub-regional business office and rural offices of regions' municipalities the survey concerning farming and subsidiary businesses. The questionnaire was sent to 736 farms in Raahe sub-region and 151 answers were got back. When inquired after educational and advisory needs, the greatest demand seems to be for ADP, software and network skills and usage. Even 31 % of respondents would like to have training for it and 27 % thought they might use some advising services. One quarter of respondents would need advising services in farming subsidies and 17 % would like to have some instruction in making of web-pages too. (Maatalouden ja liitännäiselinkeinojen yrityskysely 2004.)

There has been also done a survey concerning training demands of tourist entrepreneurs by Central Ostrobothnia Polytechnic, Ylivieska Unit in Oulu Southern region. The survey was sent to 164 tourism entrepreneurs in summer 2004, and 33 entrepreneurs responded to it. 60 % of them offered accommodation services, 67 % restaurant or catering services, 36 % rural tourism services and 58 % programme services. Most of the entrepreneurs have some vocational qualification or matriculation. The greatest demand in training was for improving customer service know-how (46 % respondents kept it important or very important). On the other hand, there was minor demand for improving computer skills thus only 19 % though they would need plenty of training for them. When considering marketing, product development was the most important subject for training (current products 68 %, new products 52 %). Also training for e-business was seen significant (26 %). Short-term courses were considered the most favourable form of training. (Siirilä & Suihkonen 2004.) On the contrary, in the survey of Laru et al. (2004), nature tourism entrepreneurs in Oulunkaari and Raahe sub-regions mentioned marketing, pricing, business ethics and training for ADP and making home pages the major educational demands. For example, 55 % of entrepreneurs kept training for how to update databases as very significant. The survey deals with interest in development of location based services, so the subject may affect here to importance of training considering ICT issues.

However, it's worth noticing, that these numbers don't reveal how many of entrepreneurs would actually participate in training, if there is organised some. It depends on information, time available and contents, which courses entrepreneurs consider essential to attend.

According to the survey of educational services done in this literature review, there are not so many courses available for nature-based entrepreneurs in e-form in Northern Ostrobothnia at the moment. When network connections are becoming better in peripheral rural areas too, demand for e-courses is probably increasing. For example, entrepreneurs from different regions could participate in same courses from their home, which would save time and make possible for one man companies to update know-how too. Naturally, there has to be taken care of availability of advisory and support services concerning e-learning too. As Hintsala and Saarimaa (2000) noticed, developmental actions should be done for suppor-

ting entrepreneurs' (in their study organic farmers') independent acquisition of information and education. SMEs would like to get all expert and advisory services from one place and they also wish to have more information on services. E-services can be seen as one solution for this.

In the preliminary study concerning current situation and development of nature-based entrepreneurship in Northern Ostrobothnia (Elomaa et al. 2003), as a conclusion there were done two proposals for implementation: 1) drawing up a strategy for supporting nature-based entrepreneurship and strengthening nature know-how, and 2) creating a network academy for nature-based entrepreneurship. The aim was to continue preparation of the strategy on the basis of preliminary survey, and emphasising nature tourism in it. However, a separate strategy has not been done, but nature-based entrepreneurship has been included in strategies of connecting branches, e.g. environmental and natural resource branches, as seen before. The network academy for nature-based entrepreneurship, which means collecting together educational supply from all educational levels (mainly higher vocational and university education), was planned to be realised as a project, but it didn't got financing. In any case, the idea of the network academy can be partly seen to come true in the multidisciplinary master programme EnviroMap and the graduate school EnviroNet, both at the University of Oulu. Information on the services offered for students and enterprises by Oulu Polytechnic, School of Renewable Natural Resources, has also been collected together as Environment Info e-service (see http://www.oamk.fi/luova/ymparistoinfo/).

In the Koillis-Suomi region, there have been made interesting plans for connecting strong know-how of nature-based entrepreneurship and information technology. Together with education organisations, like Oulu Polytechnic, there have been planned for creating a regional centre of expertise based on information society and nature. The focuses of this "nature university" would be strengthening natural and environmental entrepreneurship by promoting top knowledge and competition capabilities, developing new sustainable operations models and structures, producing new products and services, and strengthening education and research activities in nature and environmental issues. The aim is to become an internationally recognised region of northern natural-based know-how by 2006. (Kinnunen 2004.)

At the moment, there is a cooperation network between nature centres of Northern Ostrobothnia in preparation. There are nature centres administrated by Metsähallitus (Forest and Park Service) and municipalities in the region, and some of the future nature centres are operated as projects. Nature centres are remarkable tourism attractions, information points and places for both recreation and education. In addition, many of them are planned to work as base for nature-based entrepreneurship, so they could be included in expert, advisory and educational service providers as well. There are some plans for constructing the natural product centre to Northern Ostrobothnia, to Pyhäjärvi, too.

5 Conclusions

Preconditions for nature-based entrepreneurship are good in Northern Ostrobothnia. However, most of the nature-based enterprises are small or micro-sized, and many of them operate part-timely or as a secondary occupation. Nature-based entrepreneurship is focused in nature tourism, natural product line and small-sized wood processing, but there are some enterprises considered as nature-based enterprises in arts and handicraft industry, food industry and environmental branch in the region too. Also farming and many subsidiary trades connected to it have points of contact with nature-based entrepreneurship. The amount of enterprises is difficult to define because of fragmented nature of nature-based entrepreneurship, however. In this literature review, nature-based entrepreneurship has been taken broadly, and other lines of business mentioned above have also been examined in context of nature-based entrepreneurship.

Nature-based entrepreneurship has been included in many provincial and sub-regional development plans, e.g. in the preliminary study of natural resources field and in the strategies and development programmes of environmental branch. The Provincial Plan and Development Programme and the Rural Women Entrepreneurship Programme direct general development of entrepreneurship in Northern Ostrobothnia. There has been done the preliminary survey for current situation and development of nature-based entrepreneurship in the region too.

Northern Ostrobothnia is known as the region of high-tech expertise and ICT. This expertise has affected to development of other branches, and at the moment, there has been drawn up plans for emphasising to interfaces of ICT, environmental branch and biotechnology, for example. This opens interesting opportunities for product and service development e.g. in natural resource branch, and in nature-based entrepreneurship too.

The region has very good accessibility of information society. By the end of 2005, broadband connections are going to reach almost 100 % of the inhabitants in Northern Ostrobothnia. This has a positive effect on business activities in peripheral rural areas, like increase in computer and Internet usage, possibility for remote working and development of e-business. At the moment, enterprises use ICT mostly for communication, information search, banking services and free-time services. Internet usage is in many respects passive and concentrated to informative issues. However, interactive usage is becoming more general in the form of e-commerce and different e-services, which focuses on both public and business services. Service production and development of information society is directed by Information Society Programme, Broadband Strategy and sub-regional e-strategies, and developmental activities regarding information society can be found from all development programmes drawn up in Northern Ostrobothnia.

Expert and advisory services for enterprises are many times offered by same organisations, like Rural Advisory Center and Employment and Economic Development Centre. Service providers for Internet portals, databases or e-expert applications can be considered as experts, and organisations giving advising for financing or other business activities as advisors.

There are a lot of general business services as well as field-specific services available in the region, but as it can be seen on the basis of different surveys and studies, entrepreneurs don't know them well and some of entrepreneurs never use them. There has been suggested, that all the expert and advisory services should be found from a single place - from the Internet, for example.

Furthermore, majority of existing expert, advisory and education services for SMEs and nature-based enterprises in Northern Ostrobothnia are not yet in the e-form, even if there is plenty of expert, advisory and education material available in Internet. This material is usually informative and free of charge including general information on service providers, services, projects, contact information and some links. However, there have been developed some e-services as Internet or mobile service applications in the region. E-forms, map services and online stores are probably the most used of them.

There are over 20 educational organisations offering education services concerning nature-based or suchlike entrepreneurship in Northern Ostrobothnia, but the most of entrepreneurs have got education in some other line of business. Many entrepreneurs have started operation on the basis of a hobby, which sometimes can be shown as lack of professional skills or unprofitable business. Thus, there are demands for supplementary education and short-term courses, and demands for improving of ICT skills seem to be on top in many surveys.

The focuses in development of nature-based entrepreneurship are cooperation, marketing, customer-based product development, customer service, quality and ICT utilisation. Consequently, the possibilities of ICT have been noticed also by nature-based entrepreneurs. Marketing via Internet, using mobile services and interest in e-commerce have become more general in business activities and daily routines, but there is still great demand for e-service applications which would be planned directly for SMEs and nature-based enterprises. Above all, it appears that both entrepreneurs and customers need training for e-service usage and time to get accustomed to them before they can be used comprehensively in business.

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Appendix 1.

e-Expert Services for SMEs (nature-based enterprises) in Northern Ostrobothnia

ProAgria Rural Advisory Center in Oulu (ProAgria Oulun Maaseutukeskus)

- www.oulunmaaseutukeskus.fi (in Finnish)
- A part of ProAgria group, one of the 21 regional ProAgria Rural Advisory Centres
- Regional expert and advisory organisation for farming, rural entrepreneurship, housekeeping and fishing industry
- Services: information, advice and training for rural enterprises, farmers and resident of local villages in Northern Ostrobothnia
- Web-pages: training calendar, e-forms, information on services and ongoing projects, Maaviesti-magazine (the magazine of ProAgria Rural Advisory Center in Oulu and Kainuu), links
- Public, charge-free, no registration (except for intranet)

Rural Women's Advisory Organisation in Oulu (Oulun maa- ja kotitalousnaisten piirikeskus)

- www.oulunmaaseutukeskus.fi (in Finnish)
- A part of ProAgria group
- Regional expert and advisory organisation for housekeeping, consumer and landscape care and developing rural small-business activity, women living in the countryside as a special target group
- Services: training, advice, planning services for SMEs operating in the field of rural tourism, food services, food upgrading or nature products
- Web-pages: see ProAgria Rural Advisory Center in Oulu

The 4H District of Oulu (Oulun 4H-piiri)

- http://www.oulun4h.fi/ (in Finnish)
- One of the districts of the Finnish 4H Federation
- An independent counselling organisation which promotes a youth work, supports operation of local associations (35 in the region of the 4H District of Oulu) and get financing for operation.
- Services: education (teaching practical skills to young people), projects, information, cooperation with schools, enterprises and associations
- Web-pages: information on the organisation, list of events, contact information, data bank (not working)
- Charge-free, no registration

Centre for Forestry in Northern Ostrobothnia (Metsäkeskus Pohjois-Pohjanmaa)

- http://www.metsakeskus.fi/pp/kehys1.htm (in Finnish)
- One of the 14 regional Centres for Forestry
- Services: advising for forest owners, information on subsidies, developing forestry, training, projects (e.g. the provincial Working Programme of Forestry)
- Web-pages: informative, consists of e.g. information on services and projects, e-publications, Metsäikkuna-magazine (in Finnish, see http://www.metsakeskus.fi/pp/metsaikkuna/), links
- Charge-free, no registration

Regional Forest Owners´ Union of Northern Finland (Pohjois-Suomen Metsänomistajien Liitto)

- http://www.pohjois-suomen-mhy.fi/
- The union is the regional central organisation for the local Forest Management Associations (28 in Northern Finland). Its goal is to promote private forestry and protect private forest owners' interests as well as guide and develop the activities of the FMAs and the co-operation between forest owners. The Regional Union also provides guidance and assistance in the marketing of forest products.
- Web-pages: informative, consist of e.g. bulletins, links, membership application form
- Charge-free, no registration required

Union of Agricultural Producers and Forest Owners in Northern Finland (MTK Pohjois-Pohjanmaa)

- http://www.mtk.fi/default.asp?path=2918,2935, http://www.mtk.fi/default.asp?path=2918,2987,14410,19611 (in Finnish)
- Central Union of Agricultural Producers and Forest Owners (MTK) is occupational organisation and interest group for agricultural producers, forest owners and other rural entrepreneurs. Union of Agricultural Producers and Forest Owners in Northern Finland is one of the 16 regional unions.
- Services: training, information, taking care of various interests and living conditions of farmers, forest owners, rural entrepreneurs and rural people
- Web-pages: informative, consist of information on training and contact information
- Charge-free, no registration

North Ostrobothnia Regional Environmental Centre (Pohjois-Pohjanmaan ympäristökeskus)

- http://www.ymparisto.fi/default.asp?contentid=56005&lan=en
- One of the 13 regional environmental administration units in Finland
- The purpose of NOREC is to serve the general public and to improve the environmental situation in Northern Ostrobothnia according to the principles of sustainable deve lopment, while co-operating as widely as possible with the various parties concerned. The Centre is also actively involved in the production of information concerning the relationship between human beings and their natural environment, while seeking to enhance the living conditions in the area.

- Services: information services (on request), library, publications, laboratory
- Web-pages consist of e.g. Environmental e-Service Network of Northern Ostrobothnia: information on environmental e-services pulled together (in Finnish, see http://www.ymparisto.fi/default.asp?node=8600&lan=fi), some e-publications
- Charge-free (information services on request, laboratory services and most of publications chargeable), no registration required

Agrifood Research Finland, North Ostrobothnia Research Station (Maa- ja elintarviketalouden tutkimuskeskus MTT, Pohjois-Pohjanmaan tutkimusasema)

- http://www.mtt.fi/english/research/regional/regional.html, http://www.mtt.fi/tutkimus/alueellinen_tutkimus/ruukki.html (in Finnish)
- A regional unit of Agrifood Research Finland.
- Research on plants, forage grass based cattle farming, horticulture, ecological production, environment, also some regional development projects
- Web-pages: informative, consist of information on projects and experts, list of publications, links (in Finnish)
- Charge-free, no registration

Finnish Forest Research Institute, Muhos Research Station (Metsäntutkimuslaitos, Muhoksen tutkimusasema)

- http://www.metla.fi/mu/index-en.htm
- A research station specialising in research on the ecology of forest regeneration, changes in the condition of the forest environment, and the development of forest management methods for use in the Ostrobothnia-Kainuu region
- Services: laboratory services, researches on request, information services, publications
- Web-pages: information on ongoing research and services, Metinfo Phenology Database (real-time phenological observations on the Internet, no registration required), links
- Charge-free (most of publications chargeable), no registration required in web-pages of Muhos Research Station

Metsähallitus (Finnish Forest and Park Service) in Ostrobothnia (Metsähallitus, Pohjanmaa)

- http://www.metsa.fi/page.asp?Section=1512, http://www.metsa.fi/page.asp? Section= 520 (in Finnish)
- Metsähallitus is a state enterprise that administers state-owned land and water areas. Metsähallitus has the challenging responsibility of managing and using these areas in a way that benefits Finnish society to the greatest extent possible. Metsähallitus' basic task is to carry out environmental and customer-focused forestry, as well as nature conservation.
- Services related to recreation and nature tourism are provided by the Metsähallitus business units Natural Heritage Services, Wild North, Forestry and Laatumaa. Both free and chargeable services are available.

- Nature Heritage Services of Ostrobothnia-Kainuu: taking care and management of 6 national parks, 5 nature parks, 4 hiking areas and 197 protected areas, Nature Centre of Syöte, hiking advice
- Information for enterprises and nature tourists: making right-to-use-contracts, licences for snowmobiling, fishing and hunting (Forestry in Ostrobothnia, Wild North), subcontracting for nature tourism (Wild North)
- National web-pages (see http://www.metsa.fi/default.asp?Section=1176): information on services, Hiking Pages, publications (some charge-free)

The Finnish Game and Fisheries Research Institute, Oulu and Taivalkoski Game and Fisheries Research (Riista- ja kalatalouden tutkimuslaitos, Oulun ja Taivalkosken riistan- ja kalantutkimus -toimipaikat)

- http://www.rktl.fi/english/ (main page)
- The Finnish Game and Fisheries Research Institute produces scientific and high-quality data about fisheries, game and reindeer for sustainable use of natural resources, and helps to maintain biodiversity through research and aquaculture.
- Besides Oulu and Taivalkoski Game and Fisheries Research also Kuusamo Fish Farm locating in Northern Ostrobothnia
- Services: research on fisheries, game and reindeer (Oulu), roe producing, maintaining endangered fisheries and research on game (Taivalkoski)
- No own web-pages in English (for contact information see http://www.rktl.fi/english/institute/stations/oulu_game_and.html and http://www.rktl.fi/english/institute/stations/taivalkoski_game_and.html), Taivalkoski Game and Fisheries Research in Finnish http://www.rktl.fi/vesiviljely/kalanviljelylaitokset/taivalkosken_riistan_kalantutkimus.html
- Charge-free, no registration

NorNet - Northern Environmental Research Network (NorNet-verkosto)

- http://www.nornet.oulu.fi/english/index.html
- The NorNet is the co-operation network of northern Finnish environmental researchers. The partners in the alliance: University of Oulu, Finnish Environment Institute, North Ostrobothnia Regional Environment Centre, Kainuu Regional Environment Centre, Lapland Regional Environment Centre, Finnish Game and Fisheries Research Institute, Finnish Forest Research Institute, Agrifood Research Finland and Geological Survey of Finland.
- The network aims to support, integrate and profile northern research, expert and laboratory services and education. It serves as an umbrella organisation for the collaborating partners' ongoing projects, with a focus on launching new projects. The aim is to enhance co-operation between research institutes. Co-operation with the users of research findings, business life and regional development organisations is also essential.
- Web-pages: list of research projects, links to partners' web-pages and financial sources (all in Finnish, see http://www.nornet.oulu.fi/)
- Public, charge-free, no registration

NorTech Oulu (Centre of Northern Environmental Technology)

- http://nortech.oulu.fi/eng/palvelut.html
- Project organisation of University of Oulu
- Acts in liaison between business and education organizations combining requirements from enterprises to knowledge of universities creating new innovative operating environment
- Main services focus on preparation and implementation of co-operative projects between Northern Finland and Barents Region as well as information services at these regions especially in environmental issues.
- Environmental services:
  - Environmental project planning and implementation
  - Environmental technology specialist pool
  - Continuous education in the field of environmental technology
  - Pre-feasibility studies in the field of environmental technology in the Barents area
  - Seminars and workshops in the field of environmental technology
  - Information services: search for companies, ongoing projects, specialists and legislation in the field of environmental technology
  - Project management (projects e.g. Ecopark Oulu - service concept, Ecotest - testing ground for environmental technology products, Eco Forum -development of co-operation in environmental research and education, Environment Cluster - business together with North West In Russian enterprises and organisations => see more detailed information http://nortech.oulu.fi/eng/projektit.html)
- Web-pages: information on services, list of and links to ongoing projects, links to co-operation partners (see more detailed http://www.ymparistoklusteri.fi/yritykset.html), news
- Charge-free, no registration

Ecopark Oulu (Service network for product testing in environmental technology) (Ecopark Oulu - ympäristöteknologian tuotetestauksen palveluverkosto)

- http://www.ecopark.fi/palvelut_4.php (in Finnish)
- Ecotest Oulu supports environmental technology enterprises in product development and product testing by networking enterprises, experts, laboratories and public organisations offering testing grounds and environmental services. Ecotest Oulu serves co-operation partners of Ecopark Oulu, Environmental Cluster and Eco Forum (see http://www.ecopark.fi/yhteistyossa_1.php and http://www.ecopark.fi/yhteistyossa _2.php, in Finnish).
- Services: product testing, information services (e.g. information on markets and environmental regulation, following-up environmental licence decisions, collecting and evaluating information), training, expertise network (electronic register of experts on the way), project incubator, coordination of meetings, training and expositions, marketing, translation tasks Russian-Finnish-English
- NorTech Oulu as an administrator

Environment Info (Ympäristöinfo)

- http://www.oamk.fi/luova/ymparistoinfo/index.php?lang=en
- The service for students of Oulu Polytechnic (School of Renewable Natural Resources), for methodical and informational support
- The aim is to develop cooperation between companies, report publishing activities, share environmental information for all site users
- Web-pages consist of information on experts, services and projects (in English), information on environmental studies in Oulu Polytechnic, lists of theses and links (in Finnish)
- Administrator: Oulu Polytechnic, School of Renewable Natural Resources

Ympäristötarmo

- http://www.ymparistotarmo.fi/ (in Finnish)
- A SME operating in the field of environment and natural resources
- Services: planning and implementing of environmental services, e.g. landscaping, environmental surveys, environmental and forestry care, advice, projects, training (environmental knowledge, environmental care and protection, waste disposal, recycling), personnel leasing
- Web-pages in Finnish, informative: information on services, price list

Employment and Economic Development Centre for Northern Ostrobothnia (Pohjois-Pohjanmaan TE-keskus)

- http://www.te-keskus.fi/web/tepop.nsf/FrameSetENG?OpenFrameSet, http://www.te-keskus.fi/web/tepop.nsf/FrameSetFIN?OpenFrameSet (in Finnish)
- Advisory, financing and development services, supporting business activities in Northern Ostrobothnia, realises regional employment policy
- Services for farming and fisheries (financing, subsidies, advice, development projects), employment and enterprise services (expertise, international services, financing)
- Web-pages: only contact information in English, other services on the main page (e.g. Business Training Database)
- Statistical information (see eEnnakointi http://eennakointi.fi/, Economic Review of Northern Ostrobothnia), e-forms, links
- Public, charge-free, no registration

eEnnakointi.fi - Regional Foresight Information System of the Northern Ostrobothnia

- http://www.eennakointi.fi/english/Default.htm
- The foresight information produced in the foresight project is shared through the Regional Foresight Information System on the Internet.
- includes statistical information, reports from e.g. young people and labour market, women and labour market, social responsibility, employment strategies, information on foresight
- Also e-learning material (in Finnish)
- Most of the information in Finnish, project description and 'drop-down'-menus in English
- Public, charge-free, no registration

Statistics Finland, Regional Service Office of Oulu (Tilastokeskus, Oulun aluepalvelu)

- http://www.stat.fi/tk/tp_alue/oulu/ (in Finnish)
- Regional Service Office of Oulu operates in 5 provinces: Lapland, Northern Ostrobothnia, Kainuu, North Savo, North Karelia
- e-Services: AlueOnline - Pohjois-Suomen aluekatsaus (regional review of Northern Finland), Seutukunta- ja maakuntakatsaus (provincial and subregional reviews); SeutuNet-tilastopalvelu (subregional statistics service, includes thematic maps and figures), SuomiCD, Kuntafakta (regional databases)
- Other services: address registers of enterprises and educational organisations
- Chargeable (some statistics charge-free)
- Registration required for chargeable services

E-Biz Net (Service Network for e-Business) (E-Biz Net - Sähköisen liiketoiminnan palveluverkosto)

- http://www.ebiznet.fi (in Finnish)
- E-Biz Net has been developed in a project and designed for enterprises. The E-Biz Net is a service network and data bank, which consists of current information, services and research material concerning e-business.
- Web-pages: e-learning material, courses and educational organisations in the field of e-business, information on subjects for theses and enterprises for practical training, links, web-camera
- Pages are under construction, coming up e.g. a list of entrepreneurs and service providers, latest news, entertainment and free-time services
- Administrator: Central Ostrobothnia Polytechnic, CENTRIA Research and Development, Haapajärvi (E-Biz Net project)
- Charge-free, no registration

Some regional/ subregional portals (all in Finnish)

auvo.net

- http://www.auvo.net/
- An Internet service which consists of e-library, e-school, e-forms (e.g. for farmers) maps (location based service), e-nurse (possibility to ask for health issues), electronic appointments, feedback
- Free support service (by phone, e-mail or feedback form)
- Developed in eKoillis-Suomi project
- Charge-free, no registration

Koillismaan Tietoverkko

- http://www.koillismaa.fi/
- In Koillismaa subregion
- e.g. registers of enterprises and associations
- Charge-free, registration required for e-mail

Oulun Eteläinen alueportaali

- www.olet.info
- In Oulu Southern region (= Ylivieska, Nivala-Haapajärvi and Siikalatva subregions)
- e.g. Puntari service (commercial service), e-forms, news, links, entertainment services
- Charge-free, no registration

Raahen seudun alueportaali

- www.raaheseutu.info
- In Raahe subregion
- e.g. Puntari service (commercial service), e-forms, news, links, entertainment services
- Charge-free, no registration

Puntari

- http://www.puntari.fi/web/sa_etori/puntari_etusivu.jsp
- e-business and e-service network of Oulu Southern and Raahe subregions
- Consists of enterprise directory (contact information of 8 500 enterprises), event calendar, Maalta.net service ("From the countryside" service), advertising
- Charge-free, registration required for e-shop

Maalta.net

- www.maalta.net
- Rural e-service network for Raahe and Kalajoki subregions
- In Maalta.net rural enterprises present their products and services
- Enterprise directory, event calendar, marketplace (buying and selling), jobs and applying for a job, changing messages
- Developed in Maatilat muutoksessa ("Farms in change") project
- Charge-free, password needed for changing messages

PalveluApaja.net

- http://www.palveluapaja.net/
- Electronic meeting place for rural development projects and entrepreneurs
- Includes services from over 400 rural entrepreneurs from 70 municipalities (most of the service providers are from South, Central or Northern Ostrobothnia and Middle Finland)
- Services: seaching service for rural engine contractors and other service entrepreneurs, bulletin board
- It's possible to search for services by provinces or by municipalities (in Central Ostrobothnia region only)
- Developed in co-operation with several projects
- Charge-free, registration needed for contacting to service providers
- Administrator: Rural Expertise Network Oras

oulunlahiruoka.fi

- http://www.oulunlahiruoka.fi/
- Network of rural food entrepreneurs in Oulunkaari and Oulu subregions
- Services: information on local food, food producers and upgraders, food services; recipes, links, e-marketplace
- Developed in Oulunkaaren Ruokaketju ("Food chain in Oulunkaari subregion") project, administrator The Oulu Region Joint Authority for Vocational Training

Siikalatva.com

- www.siikalatva.com
- The commercial portal of Siikalatva subregion
- Enterprise directory, searching service, presentations of rural tourism enterprises (include e.g. short presentation films from each enterprise), list of associations, villages and municipalities, links, discussion forum, e-mail services, marketplace, news, extranet (registration needed)

Siikalatva.fi

- www.siikalatva.fi
- The portal of Siikalatva subregion
- Information on municipalities, public services, education and events in the region, news, list of ongoing projects
- Expertise Network Intelpolis (registration and password needed), consists of expertise register, project material (e.g. proceedings)

Keskipohjanmaa.net, Rural services pages (Keskipohjanmaa.net, Maaseutupalvelu -sivut)

- http://www.keskipohjanmaa.fi/maaseutupalvelut/
- The rural services portal administrated by Keskipohjanmaa newspaper and Union of Agricultural Producers and Forest Owners in Central Ostrobothnia
- Information on rural development and actors involved in it, forestry, authority services, training, products and services, contracting, feedback, enterprise register, links (e.g. to 14 municipalities in Kalajoki and Pyhäjoki river valleys, which belong to Northern Ostrobothnia)
- Charge-free, no registration

Appendix 2.

Advisory, Supporting and Education Services for SMEs (nature-based enterprises) in Northern Ostrobothnia

Advisory services

ProAgria Rural Advisory Center in Oulu (ProAgria Oulun Maaseutukeskus)

- www.oulunmaaseutukeskus.fi (in Finnish)
- A part of ProAgria group, one of the 21 regional ProAgria Rural Advisory Centres
- Regional expert and advisory organisation for farming, rural entrepreneurship, housekeeping and fishing industry
- Services: information, advice and training for rural enterprises, farmers and resident of local villages in Northern Ostrobothnia
- Web-pages: training calendar, e-forms, information on services and ongoing projects, Maaviesti-magazine (the magazine of ProAgria Rural Advisory Center in Oulu and Kainuu), links
- Public, charge-free, no registration (except for intranet)

Rural Women's Advisory Organisation in Oulu (Oulun maa- ja kotitalousnaisten piirikeskus)

- www.oulunmaaseutukeskus.fi (in Finnish)
- A part of ProAgria group
- Regional expert and advisory organisation for housekeeping, consumer and landscape care and developing rural small-business activity, women living in the countryside as a special target group
- Services: training, advice, planning services for SMEs operating in the field of rural tourism, food services, food upgrading or nature products
- Web-pages: see ProAgria Rural Advisory Center in Oulu

The 4H District of Oulu (Oulun 4H-piiri)

- http://www.oulun4h.fi/ (in Finnish)
- One of the districts of the Finnish 4H Federation
- An independent counselling organisation which promotes a youth work, supports operation of local associations (35 in the region of the 4H District of Oulu) and get financing for operation.
- Services: education (teaching practical skills to young people), projects, information, cooperation with schools, enterprises and associations
- Web-pages: information on the organisation, list of events, contact information, data bank (not working)
- Charge-free, no registration

Centre for Forestry in Northern Ostrobothnia (Metsäkeskus Pohjois-Pohjanmaa)

- http://www.metsakeskus.fi/pp/kehys1.htm (in Finnish)
- One of the 14 regional Centres for Forestry
- Services: advising for forest owners, information on subsidies, developing forestry, training, projects (e.g. the provincial Working Programme of Forestry)
- Web-pages: informative, consists of e.g. information on services and projects, e-publications, Metsäikkuna-magazine (in Finnish, see http://www.metsakeskus.fi/pp/metsaikkuna/), links
- Charge-free, no registration

Regional Forest Owners´ Union of Northern Finland (Pohjois-Suomen Metsänomistajien Liitto)

- http://www.pohjois-suomen-mhy.fi/
- The union is the regional central organisation for the local Forest Management Associations (28 in Northern Finland). Its goal is to promote private forestry and protect private forest owners' interests as well as guide and develop the activities of the FMAs and the co-operation between forest owners. The Regional Union also provides guidance and assistance in the marketing of forest products.
- Web-pages: informative, consist of e.g. bulletins, links, membership application form
- Charge-free, no registration required

Metsähallitus (Finnish Forest and Park Service) in Ostrobothnia (Metsähallitus, Pohjanmaa)

- http://www.metsa.fi/page.asp?Section=1512,http://www.metsa.fi/page.asp?Section=520 (in Finnish)
- Metsähallitus is a state enterprise that administers state-owned land and water areas. Metsähallitus has the challenging responsibility of managing and using these areas in a way that benefits Finnish society to the greatest extent possible. Metsähallitus' basic task is to carry out environmental and customer-focused forestry, as well as nature conservation.
- Services related to recreation and nature tourism are provided by the Metsähallitus business units Natural Heritage Services, Wild North, Forestry and Laatumaa. Both free and chargeable services are available.
- Nature Heritage Services of Ostrobothnia-Kainuu: taking care and management of 6 national parks, 5 nature parks, 4 hiking areas and 197 protected areas, Nature Centre of Syöte, hiking advice
- Information for enterprises and nature tourists: making right-to-use-contracts, licences for snowmobiling, fishing and hunting (Forestry in Ostrobothnia, Wild North), subcontracting for nature tourism (Wild North)
- National web-pages (see http://www.metsa.fi/default.asp?Section=1176): information on services, Hiking Pages, publications (some charge-free)

Union of Agricultural Producers and Forest Owners in Northern Finland (MTK Pohjois-Pohjanmaa)

- http://www.mtk.fi/default.asp?path=2918,2935, http://www.mtk.fi/default.asp?path=2918,2987,14410,19611 (in Finnish)
- Central Union of Agricultural Producers and Forest Owners (MTK) is occupational organisation and interest group for agricultural producers, forest owners and other rural entrepreneurs. Union of Agricultural Producers and Forest Owners in Northern Finland is one of the 16 regional unions.
- Services: training, information, taking care of various interests and living conditions of farmers, forest owners, rural entrepreneurs and rural people
- Web-pages: informative, consist of information on training and contact information
- Charge-free, no registration

Agrifood Research Finland, North Ostrobothnia Research Station (Maa- ja elintarviketalouden tutkimuskeskus MTT, Pohjois-Pohjanmaan tutkimusasema)

- http://www.mtt.fi/english/research/regional/regional.html, http://www.mtt.fi/tutkimus/alueellinen_tutkimus/ruukki.html (in Finnish)
- A regional unit of Agrifood Research Finland.
- Research on plants, forage grass based cattle farming, horticulture, ecological production, environment, also some regional development projects
- Web-pages: informative, consist of information on projects and experts, list of publications, links (in Finnish)
- Charge-free, no registration

NorTech Oulu (Centre of Northern Environmental Technology)

- http://nortech.oulu.fi/eng/palvelut.html
- Project organisation of University of Oulu
- Acts in liaison between business and education organizations combining requirements from enterprises to knowledge of universities creating new innovative operating environment
- Main services focus on preparation and implementation of co-operative projects between Northern Finland and Barents Region as well as information services at these regions especially in environmental issues.
- Environmental services:
  - Environmental project planning and implementation
  - Environmental technology specialist pool
  - Continuous education in the field of environmental technology
  - Pre-feasibility studies in the field of environmental technology in the Barents area
  - Seminars and workshops in the field of environmental technology
  - Information services: search for companies, ongoing projects, specialists and legislation in the field of environmental technology
  - Project management (projects e.g. Ecopark Oulu - service concept, Ecotest - testing ground for environmental technology products, Eco Forum -development of co-operation in environmental research and education, Environment Cluster - busi

ness together with North West In Russian enterprises and organisations => see more detailed information http://nortech.oulu.fi/eng/projektit.html)

- Web-pages: information on services, list of and links to ongoing projects, links to co-operation partners (see more detailed http://www.ymparistoklusteri.fi/yritykset.html), news
- Charge-free, no registration

Ecopark Oulu (Service network for product testing in environmental technology) (Ecopark Oulu - ympäristöteknologian tuotetestauksen palveluverkosto)

- http://www.ecopark.fi/palvelut_4.php (in Finnish)
- Ecotest Oulu supports environmental technology enterprises in product development and product testing by networking enterprises, experts, laboratories and public organisations offering testing grounds and environmental services. Ecotest Oulu serves co-operation partners of Ecopark Oulu, Environmental Cluster and Eco Forum (see http://www.ecopark.fi/yhteistyossa_1.php and http://www.ecopark.fi/yhteistyossa_2.php, in Finnish).
- Services: product testing, information services (e.g. information on markets and environmental regulation, following-up environmental licence decisions, collecting and evaluating information), training, expertise network (electronic register of experts on the way), project incubator, coordination of meetings, training and expositions, marketing, translation tasks Russian-Finnish-English
- NorTech Oulu as an administrator

Ympäristötarmo

- http://www.ymparistotarmo.fi/ (in Finnish)
- A SME operating in the field of environment and natural resources
- Services: planning and implementing of environmental services, e.g. landscaping, environmental surveys, environmental and forestry care, advice, projects, training (environmental knowledge, environmental care and protection, waste disposal, recycling), personnel leasing
- Web-pages in Finnish, informative: information on services, price list

Rural Working Programmes (Maaseudun työohjelmat)

- Through Working Programmes programme-based development work can be directed according to the goals of the Regional Rural Development Programme (ALMA) and the Objective 1 Programme. With Working Programmes can be increased cooperation and information between actors involved in project activities. The aim is to project new ideas and search for proper executers and financiers for the projects.

- **Working Programme of Villages** (Kylien työohjelma)
  - http://www.pohjois-pohjanmaa.fi/kylat/sivu3.htm (in Finnish)
  - Coordinator: Villages of Northern Ostrobothnia (Pohjois-Pohjanmaan Kylät ry)
  - Financed by Employment and Economic Development Centre for Northern Ostrobothnia, administered by Council of Northern Ostrobothnia, started at 1.8.2000

and authorities. With Working Programme is being coordinated project-based development work of villages.
- Working Programme of Villages in Northern Ostrobothnia "Lähetään kylille!" see http://www.pohjois-pohjanmaa.fi/uudet/projektit/keproj.htm (in Finnish)

- **Working Programme of Forestry** (Metsätalouden työohjelma)
  - http://www.metsakeskus.fi/pp/kehys1.htm (in Finnish)
  - Coordinator: Centre for Forestry in Northern Ostrobothnia (Metsäkeskus)
  - The aim is to project new ideas and search for proper executers and financiers for the projects. The main goal of Working Programme of Forestry is to create permanent structures for development work, planning, implementation and evaluation of livelihood.

- **Working Programme of Food Supplies** (Elintarviketyöohjelma)
  - http://www.osakk.fi/elintarvike/etusivu/index.htm (in Finnish)
  - Coordinator: The Oulu Region Joint Authority for Vocational Training
  - The aim is to develop, promote and support provincial, super-provincial and national production of food supplies, inform about new innovative development possibilities and promote indirectly operation of SMEs in Northern Ostrobothnia.

Centre of Expertise in Food Industry, Regional Coordinator of Northern Ostrobothnia (Elintarvikealan osaamiskeskus (ELO), Pohjois-Pohjanmaan aluekoordinaattori)

- http://www.eloverkko.net/ and http://www.osakk.fi/elintarvike/etusivu/index.htm (both in Finnish)
- A part of the national Centre of Expertise in Food Industry (national coordinator Agropolis Oy), which consists of 14 regional Centres of Expertise and two national Network Centres of Expertise. The partners are national research institutes in food industry, universities and polytechnics and regional clusters in food industry.
- ELO offers research and development services and promotes entrepreneurship in food industry as well as vitality of countryside.
- Coordinator in Northern Ostrobothnia (and Lapland): The Oulu Region Joint Authority for Vocational Training, Working Programme in Food Supplies
- The tasks of regional Centre of Expertise are e.g. creating regional group and developing its operation, enterprise contacts, advice, training, communication with interest groups, participation in and realising regional strategy and programme work, planning and realising projects, developing expertise in food industry, information transfer
- Charge-free, no registration

Ruoka-Suomi (Food Finland), Coordinator in Northern Ostrobothnia (Ruoka-Suomi, Pohjois-Pohjanmaan alue-edustaja)

- http://www.tkk.utu.fi/ruokasuomi/ and http://www.tkk.utu.fi/ruokasuomi/alueyksikot.pdf (both in Finnish)
- A theme group serving SMEs operating in food industry

- Coordinator: see Centre of Expertise in Food Industry, Regional Coordinator of Northern Ostrobothnia
- Tasks:
  - promoting proposals of the third Rural Policy Programme (especially rural SMEs
  - perating in food industry), participation in preparation for the fourth Rural Policy Programme
  - promoting rural entrepreneurship in food industry by networking actors like project coordinators, advisors, trainers, developers and reinforcing know-how
  - mediating development of legislation and official directions concerning food industry entrepreneurship
  - participation in making of regional strategies and programmes
  - realising and developing compilation of statistics, promoting food industry research through ELO network
  - information
  - giving statements for project proposals
- Web-pages (national): e.g. statistics, Food Finland bulletin (in Finnish)
- Charge-free, no registration

North Bothnic Arts and Handicrafts Industry Association (Pohjois-Pohjanmaan käsi- ja taideteollisuus ry)

- http://kotinetti.suomi.net/maakari/Yhdistys_Maakari.html (in Finnish)
- Regional Crafts and Arts Association, which has 10 local Crafts Centres and two Craft Shops (Maakari Shops) in Northern Ostrobothnia
- Services: counselling entrepreneurs, training, marketing, development services
- Web-pages: information on courses, list of shops and centres, links (in Finnish)
- Charge-free, no registration

Bothnia Design

- http://www.bothniadesign.com/english/
- Bothnia Design is the North Bothnic Arts and Handicrafts Industry´s own brand. The brand represents best products of province in Arts and Handicrafts industry.
  The mark is part of the development strategy of North Bothnic Arts and Handicrafts Industry.
- The aim is to collect actors in the field of arts and handicrafts for provincial Bothnia Design network. Tasks of the network are: to create favourable business environment for enterprises, to assist enterprises in product development, marketing and entrepreneurship. Also image construction and raising level of education and know-how include in the tasks of the network.
- Web-pages: information on Bothnia Design brand, products and product sales, application form for the trademark (in Finnish)
- Charge-free, no registration

Employment and Economic Development Centre for Northern Ostrobothnia (Pohjois-Pohjanmaan TE-keskus)

- http://www.te-keskus.fi/web/tepop.nsf/FrameSetENG?OpenFrameSet, http://www.te-keskus.fi/web/tepop.nsf/FrameSetFIN?OpenFrameSet (in Finnish)
- Advisory, financing and development services, supporting business activities in Northern Ostrobothnia, realises regional employment policy
- Services for farming and fisheries (financing, subsidies, advice, development projects), employment and enterprise services (expertise, international services, financing)
- Web-pages: only contact information in English, other services on the main page (e.g. Business Training Database)
- Statistical information (see eEnnakointi http://eennakointi.fi/, Economic Review of Northern Ostrobothnia), e-forms, links
- Public, charge-free, no registration

Pohjois-Pohjanmaan Yrittäjät (Entrepreneurs in Northern Ostrobothnia) (Pohjois-Pohjanmaan yrittäjät)

- http://www.ppy.net/ (in Finnish)
- One of the 19 regional organisations of The Federation of Finnish Enterprises. There are 31 local associations and over 2 800 member enterprises in Northern Ostrobothnia
- The aim of the regional organisation is to improve possibilities for profitable entrepreneurship, improve taking into account entrepreneurs in decision-making and to promote entrepreneurship.
- Services: charge-free advisory services, training and information for member enterprises, Pohjois-Pohjanmaan Yrittäjälehti magazine, annual reports, bulletin
- Web-pages: information on regional organisation and entrepreneurship, news, economic survey, e-form for applying for membership, enterprise and other links, feedback form (in Finnish)
- Charge-free (membership chargeable), no registration

Keski-Pohjanmaan Yrittäjät (Entrepreneurs in Central Ostrobothnia) (Keski-Pohjanmaan yrittäjät)

- http://www.kpnet.com/kepoyrit/ (in Finnish)
- Operates in 22 municipalities (Note! 7 municipalities in Northern Ostrobothnia belong to this organisation: Kalajoki, Alavieska, Sievi, Nivala, Haapajärvi, Reisjärvi, Ylivieska), over 1 700 member enterprises
- Services: information, training, advice on legal and employment matters, financing, taxation and international business
- Web-pages: information on regional organisation and membership, event calendar, links (in Finnish)
- Charge-free (membership chargeable), no registration

Oulu Chamber of Commerce (Oulun Kauppakamari)

- http://www.oulu.chamber.fi/
- Oulu Chamber of Commerce has 750 members and 4 regional divisions (3 in Northern Ostrobothnia: Kalajoki, Koillismaa and Raahe).

- Municipalities, communities, associations, educational organisations and entrepreneurs as members
- Tasks: developing operational preconditions of business, enterprise services, training, legal services, information; Oulun Kauppakamarin Palvelu Oy (Service of Oulu Chamber of Commerce) organises training and conferences, offers consulting and project services, advisory services, publication and documentation services
- Web-pages: list of members and links to their web-sites, information on services, training and event calendars, information on projects and for schools, appointment calendar for events (registration required), links (most of the information in Finnish)

Junior Chamber International Finland in Oulu (Oulun Nuorkauppakamari ry)

- http://www.jcoulu.org/ (in Finnish)
- JCI (Junior Chamber International) is a worldwide federation of young leaders and entrepreneurs. Its mission is to contribute to the advancement of the global community by providing the opportunity for young people (under 40 years old) to develop the leadership skills, social responsibility, entrepreneurship and fellowship necessary to create positive change.
- Junior Chamber International Finland in Oulu is one of the 6 Junior Chamber International in Northern Ostrobothnia (Junior Chamber International of Kalajoki-laakso, Kuusamo, Oulainen, Oulun Tervaporvarit and Raahe, see http://www.jcfin.fi/uc/index.php?52, in Finnish)
- Junior Chamber International Finland organises national competitions (Tuottava Idea - "Productive Idea", TOYP Nuoret menestyjät - "Young haves", TOYF Vuoden nuori maaseutuyrittäjä - "Young Rural Entrepreneur of the Year"), training, meetings
- Web-pages: information on the organisation and members, news, calendar, projects, e-forms, educational material, links, feedback form
- Charge-free, no registration required

State Provincial Office of Oulu (Oulun lääninhallitus)

- http://www.laaninhallitus.fi/lh/oulu/home.nsf/pages/index_eng, http://www.laaninhallitus.fi/lh/oulu/home.nsf (in Finnish)
- Services: advice, consumer affairs, education, financing (co-financing by the Structural Funds of the EU)
- Web-pages: e.g. Peruspalvelut Suomessa (Basic Services in Finland) map and searching service http://www3.intermin.fi/PPA/PPA (consists of e.g. veterinary services, food supervision, different farms by each provinces and by subregions and municipalities (in Finnish), contact information and feedback form (in English)
- Public, charge-free, no registration

Regional Council of Northern Ostrobothnia (Pohjois-Pohjanmaan liitto)

- http://www.pohjois-pohjanmaa.fi
- The Regional Council of Northern Ostrobothnia is a joint municipal authority that assumes responsibility for the general development of its region, performs the statory duties of a regional development agency and takes responsibility for land use planning at the regional level.

- Services and information on web-pages: e.g. financial advice (the Structural Funds of the EU), information on projects, statistical review of Northern Ostrobothnia (see http://www.pohjois-pohjanmaa.fi/uudet/tilasto/ketilae.htm)
- Charge-free, no registration

Finnvera, Regional Office in Oulu (Finnvera, Oulun aluekonttori)
- http://www.finnvera.fi/index.cfm?id=3 (main page, Regional Office in Oulu hasn't got own web-pages)
- Services: financing services

Subregional advisory services

Oulu Regional Tax Office (Oulun verotoimisto)
- http://www.vero.fi/default.asp?language=ENG&domain=VERO_ENGLISH (main page, Regional Tax Offices haven't got own web-pages)
- 4 subregional offices, operating in Hailuoto, Haukipudas, Ii, Kempele, Kestilä, Kiiminki, Kuivaniemi, Liminka, Lumijoki, Muhos, Oulu, Oulunsalo, Piippola, Pulkkila, Pyhäntä, Rantsila, Tyrnävä, Utajärvi, Vaala, Yli-Ii ja Ylikiiminki
- Services: taxation services

Koillismaa Regional Tax Office (Koillismaan verotoimisto)
- No own web-pages
- Two offices, operating in Kuusamo, Pudasjärvi ja Taivalkoski
- Services: taxation services

Regional Tax Office of River Valleys (Jokilaaksojen verotoimisto)
- No own web-pages
- 8 offices, operating in Alavieska, Haapajärvi, Haapavesi, Kalajoki, Kärsämäki, Merijärvi, Nivala, Oulainen, Pyhäjoki, Pyhäjärvi, Raahe, Reisjärvi, Ruukki, Sievi, Siikajoki, Vihanti ja Ylivieska
- Services: taxation services

Oulu Register Office (Oulun maistraatti)
- http://www.maistraatti.fi/en/index.html (main pages, regional register offices haven't got own web-pages)
- Local register offices are local state administrative authorities, the local authority handling e.g. Trade Register and the Register of Associations matters
- Operating in the following municipalities: Hailuoto, Haukipudas, Ii, Kempele, Kestilä, Kiiminki, Kuivaniemi, Kuusamo, Liminka, Lumijoki, Muhos, Oulu, Oulunsalo, Piippola, Pudasjärvi, Pulkkila, Pyhäntä, Rantsila, Taivalkoski, Tyrnävä, Utajärvi, Vaala, Yli-Ii, Ylikiiminki
- Web-pages: leaflets, forms, links to Information System of Enterprises and Associations (information on enterprises and associations)
- Public, charge-free (some services chargeable), no registration

Raahe Register Office (Raahen maistraatti)

- http://www.maistraatti.fi/en/index.html (main pages, regional register offices haven't got own web-pages)
- Operating in the following municipalities: Alavieska, Haapajärvi, Haapavesi, Kalajoki, Kärsämäki, Merijärvi, Nivala, Oulainen, Pyhäjoki, Pyhäjärvi, Raahe, Reisjärvi, Ruukki, Sievi, Siikajoki, Vihanti, Ylivieska
- Services and web-pages: see Oulu Register Office

Rural Development Center Oras (Maaseudun osaamisverkosto Oras)

- www.e-oras.net (in Finnish)
- Rural Development Center Oras is an expertise network which aims to promote rural entrepreneurship and living in the countryside as well as strengthen attraction of the countryside. It's a part of subregional business services in Raahe subregion.
- Services: advice on developing business idea and business, advice on applying for financing, network of expertise, training, information on living in the countryside
- Web-pages: information on services, a lot of business links (e.g. starting business, investments, change of generation, selling and marketing), information on projects, courses, living in the countryside (e.g. site database), news, extranet (registration required)
- Charge-free, no registration required (except extranet)

Maasyke ry

- http://www.maasyke.fi/index.html (in Finnish)
- The rural association of people and associations operating in the countryside, in Oulu subregion. Established by local farmers in 1994.
- Services: development projects, ATB-services (network services, web-services, reservation system, courses, other services), Maasyke Pro services (taking soil samples, advice on filling the EU-subsidy forms, making cropping plans, book keeping, consulting and installation of data processing equipment, developing entrepreneurship), Viljasuora (service for grain exchange)
- Web-pages: information on services and projects, pricelist, reservation system for rooms (registration required), magazine, feedback form, seed counter, food recipes (links not working), potato guide, links (in Finnish)

Forest Management Associations (Metsänhoitoyhdistykset)

- There are 18 local Forest Management Associations in Northern Ostrobothnia, see e.g. Forest Management Association of Kalajokilaakso http://www.mhy.fi/yhdistykset/kalajokilaakso.html (in Finnish)
- Forest Management Associations belong to Regional Forest Owners' Unions, see http://www.pohjois-suomen-mhy.fi/
- Services for forest owners, e.g. planning and realising of forest care actions, wood trade, training, advice

Association of Women Entrepreneurs in Oulu (Oulun yrittäjänaiset)

- http://www.yrittajanaiset.fi/index.php?k=3979 (main page, Association of Women Entrepreneurs in Oulu hasn't got own web-pages)
- One of the local organisations of The Central Association of Women Entrepreneurs in Finland
- The organisation is looking after the interest of women entrepreneurs in operational, business and social issues. Other services: information, training and lectures

Association of Women Entrepreneurs in Koillismaa (Koillismaan yrittäjänaiset)

- See Association of Women Entrepreneurs in Oulu, operating in Koillismaa subregion

Jobs and Society in Oulu Region (Oulun Seudun Uusyrityskeskus ry)

- http://www.uusyrityskeskus.fi/oulu/ (in Finnish)
- One of the regional counselling organisations of Jobs and Society in Finland.
- Business life, cooperation enterprises and municipalities as financiers.
- Services: charge-free advice for starting enterprises.
- Web-pages: information on services, contact information (in Finnish)

Jobs and Society in Raahe Subregion (Raahen Talousalueen Uusyrityskeskus ry)

- http://www.raahe.fi/uyk/ (in Finnish)
- See Jobs and Society in Oulu Region

Oulu Regional Business Agency (Ouluseutu Yrityspalvelut)

- http://www.oulu.ouka.fi/ouluseutu/yrityspalvelut/English/index.htm
- A non-profit regional development agency specialised in business support activities for the Oulu Region.
- The main services are: business consulting, business information, marketing, incubator services, development services, and internationalisation of business.
- Web-pages: information on services and entrepreneurship in Oulu subregion, statistics and publications, brochures (e.g. "How to set up a company" brochure, see http://www.oulu.ouka.fi/ouluseutu/yrityspalvelut/howtosetup/index.htm), enterprise register, information on ongoing projects, feedback form, links
- No registration

Start Business Center

- http://www.oulu.ouka.fi/ouluseutu/yrityspalvelut/hautomo/sbcenter/english/index.htm
- an incubator for start-ups, young companies, or companies with new business ideas, administrated by the Oulu Regional Business Agency
- The mission of the Start Business Center is to develop economically sound, growth seeking production and service enterprises, influence more start-ups, and also create a working business model for the incubator that would serve the entire Oulu Region. The incubator seeks to speed up the process from idea to production and strengthens the business activities during the beginning stages.
- For all industry segments. The activity is focused towards industry and towards advancing productive development projects of companies.

- Services: office services, development services, incubator grants
- Web-pages: information on services, e-application form, list of incubator companies and links (in Finnish)

Start Business Net

- http://www.oulu.ouka.fi/ouluseutu/yrityspalvelut/hautomo/sbnet/index2.htm (in Finnish)
- A network incubator for start-ups, young production or service enterprises, or companies with new business ideas, administrated by the Oulu Regional Business Agency
- An enterprise can be located anywhere in Oulu subregion (not necessarily in Start Business Center)
- Services: advisory and supporting services
- Web-sites: general information, information on applying for a network incubator, contact information (in Finnish)

Oulunkaari subregion (Oulunkaaren seutukunta)

- http://www.oulunkaari.com/sivut/ (in Finnish)
- Oulunkaari subregion is a federation of municipalities (Ii, Kuivaniemi, Pudasjärvi, Utajärvi, Yli-Ii, Ylikiiminki).
- Services: cooperation between municipalities in business development, projects, information, advice
- Web-pages: information on subregion, services and projects, statistics, list of enterprises and services (on the way), feedback form, extranet (registration needed)

Koillismaa Development Centre (Koillismaan Kehittämiskeskus)

- http://kehittamiskeskus.koillismaa.fi/ (in Finnish)
- Operates in Koillismaa subregion
- Tasks: preparation of subregional strategies and programmes, planning and realising of projects, coordination, promoting international relations, cooperation with interest groups
- Web-pages: information on subregion, services and projects, programme documents, feedback form

Nihak Oy (Development Company of Nivala-Haapajärvi Subregion) (Nihak Oy - Nivala-Haapajärven seutukunnan kehittämisyhtiö)

- A subregional company, founded in November 2004, operation starts in January 2005
- No own web-pages (on the way?)
- Services: advice and business services, development projects

Siikalatva Development Center (Siikalatvan kehittämiskeskus)

- http://www.siikalatva.fi/portaali/development_center
- Operates in Siikalatva subregion
- Services: advice and consulting, training, product development services, advice on financing

- Web-pages: enterprise register and information on projects (in Finnish), Intelpolis Expertise Network (registration and password required, consists of expertise register and project material)

Raahe District Business Services (Raahen seudun yrityspalvelut)
- http://www.raahenseutukunta.fi/en/seutukunta_eng.html
- Services: information on starting and developing business, advice on financing
- Web-pages (common pages with Raahe District Development Centre): information on subregion and regional development, information regional development programmes and the centre of expertise programmes, links, contact information

Ruukki Werstas
- http://www.werstas.com/sivu/en/werstas/
- Ruukki Werstas is a business incubator for digital content business and IT-business (DigiWerstas) as well as for countryside business (MaaseutuWerstas). Ruukki Werstas provides conditions for content business to develop and aids beginning companies to success better in business.
- MaaseutuWerstas offers possibilities for endeavouring in countryside and also possibilities for development and support on secondary occupations. Into the rural business incubator can seek all who plan or carry out entrepreneurship and also part time entrepreneurs. From those who start along is not demanded a farm connection.
- Services: advice, training, business services, technology services, support services
- Web-pages: information on incubator and services, list of enterprises, feedback form, picture gallery

Raahe Vocational Adult Education Centre (Raahen ammatillinen aikuiskoulutuskeskus)
- http://www.raahenaakk.fi/
- Services: business services, e.g. development projects, survey and analytical services, real estate information system consultancy, quality and environmental systems, self-controlling (in food industry enterprises)
- Web-sites: information on services, education calendar (in Finnish)

Ylivieska Subregion Business Services (Ylivieskan seudun elinkeinopalvelut)
- http://www.ysk.fi/elinkeinopalvelut/ (in Finnish)
- Operates in Ylivieska subregion
- Services: business services (e.g. advice on financing)
- Web-pages: information on services and contact information, links
- No registration (for customer control system password required)

Rural Development Centre (Maaseudun Kehittämiskeskus Oy)
- http://www.maaseudunkk.fi/index.htm (in Finnish)
- A consulting office specialising in rural entrepreneurship
- Services: rural development projects, business consulting of farming
- Web-pages: information on services, reorganisation

Haapajärvi Vocational Education Institute, Rural Development Services (Haapajärven ammatti-instituutti, Maaseudun kehittämispalvelut)

- http://www.hai.cop.fi/mkp/
- An adult education and development unit for primary production in Kalajokilaakso Joint Authority for Vocational Training
- Services: vocational education and supplementary courses (see education services below), projects e.g. in new technologies of farming, developing villages, developing forest worker entrepreneurship
- Web-pages: information on services and description of projects, village events, training calendar, feedback form

Finnish Seed Potato Centre (Suomen Siemenperunakeskus Oy)

- http://www.spk.fi/indexeng.htm
- The Finnish Seed Potato Centre Ltd is a seed potato producing enterprise, which continues the work of former state owned institute. The tasks of the SPK are the maintenance of healthy seed material and basic seed production of the potato varieties cultivated in Finland or produced for export. In this connection, the SPK maintains a close-knit cooperation with potato growers, breeders in different countries and representatives of potato varieties in Finland.
- Web-pages: information on the enterprise and production methods, data bank of potato varieties, links, seed counter and pricelists in Finnish

Local Action Groups in the Countryside (Maaseudun toimintaryhmät):

- Local Action Groups are mainly registered associations. There are 5 Local Action Groups in Northern Ostrobothnia.
- Local Action Groups realise a Community Initiative Programme of the EU (the LEADER programme) for rural development by advising, financing and starting different projects. One of the main tasks is to develop rural business activities. Also project training is organised.

- **Myötäle ry**
  - http://www.koillismaa.fi/myotale/ (in Finnish)
  - Operates in Koillismaa subregion (Kuusamo, Taivalkoski and Posio)
  - Web-pages: information on how to start projects, e-forms, links, "library" (register of books available in the Myötäle office), project register (in Finnish)

- **Jokivarsien moderni maaseutu JoMMa ry**
  - http://www.jomma.fi/ (in Finnish)
  - In Oulunkaari subregion and the municipalities of Haukipudas, Kiiminki and Muhos
  - Web-pages: information, programme documents, project register, e-forms, feedback form (in Finnish)

- **Nouseva Rannikkoseutu ry**
  - http://www.nousevarannikkoseutu.fi/ (in Finnish)

- In Oulu and Raahe subregions, 10 municipalities: Lumijoki, Siikajoki, Raahe, Ruukki, Vihanti, Pyhäjoki, Rantsila, Liminka, Tyrnävä, Hailuoto
- Web-pages: information on services and region, registration form for membership (in Finnish)

- **Keskipiste-LEADER ry**
  - http://www.keskipisteleader.net/
  - In Nivala-Haapajärvi and Siikalatva subregions, 10 municipalities: Haapajärvi, Haapavesi, Kestilä, Kärsämäki, Nivala, Piippola, Pulkkila, Pyhäjärvi, Pyhäntä and Reisjärvi
  - Web-pages: information on services and financing, project list (in English), programme documents, e-forms, feedback form, links (in Finnish)

- **Rieska-LEADER ry**
  - http://www.rieskaleader.fi/
  - Operates in the region of 10 municipalities, from which 6 are located in Northern Ostrobothnia: Alavieska, Kalajoki, , Merijärvi, Oulainen, Sievi, Ylivieska
  - Web-pages: information on services (in English), information on financing, project list, e-forms, links, feedback form, links (in Finnish)

Carrefour Jokilaaksot
- http://www.carre4.net/jokilaaksot/ (in Finnish)
- One of the 9 offices of Carrefour network in Finland, operates in Oulu Southern Region
- Objective of the Carrefour network is to bring information about the EU to the very heart of rural communities. They offer information about the European Union, EU funding, projects and trans-national cooperation. The Carrefour acts as a meeting point, a discussion forum and a place where people can plan activities and be innovative. The aim of the network is to bring EU information and EU programmes closer to the citizens of rural regions and to promote changing of experiences between rural regions.
- Web-pages: weekly bulletin, information on projects and EU-financing, links, feedback form (in Finnish)

Haapavesi Technology Center Ltd (Haapaveden Teknologiakylä Oy)
- http://www.haapavedenteknologiakyla.fi/
- Services: business consulting (developing a business idea, profitability calculations, financing, establishing a business), incubator center, education and training, office space and room rental, office services, projects
- Web-pages: information on services and ongoing projects (in Finnish)

Ii Valley Industrial Estate Ltd (Iilaakson Teollisuuskylä Oy)
- http://www.iilaakso.fi/
- Services: business consulting, office space and room rental, projects
- Web-pages: information on services, feedback form

Municipal business services (Kunnalliset elinkeinopalvelut)

- See the list of business and rural services of municipalities

Supporting and educational services

(Information has been collected from Educational Institution Service OPTI, administrated by Finnish National Board of Education, and from the web-pages of educational organisations. There are included in training programmes in natural resources and environment sector, and/ or rural entrepreneurship in 2004.)

Youth education, vocational upper secondary qualifications

Haapajärvi Vocational Education Institute, Department of Agriculture and Forestry

- http://www.hai.cop.fi (in Finnish)
- Vocational Qualification in Agriculture, Study Programme in Agriculture, Rural Entrepreneur
- Vocational Qualification in Agriculture, Study Programme in Agriculture, specialising in Horse Care and Management
- Vocational Qualification in Forestry, Study Programme in the Multiple Use of Forests, Forest Ecosystem Worker
- Vocational Qualification in Forestry, Study Programme in Forestry, Forest Worker

Haapavesi Vocational Education Institution

- http://www.haol.fi
- Vocational Qualification in Household and Consumer Services, Study Programme in Household Services, Household Services Entrepreneur or Consumer Adviser, Orientation in ecologically produced food supplies and sustainable way of living
- Vocational Qualification in the Tourism Industry, Study Programme in Tourism Activities, Tourism Activities Organiser, Orientation in Trekking Riding Guide/ Nature Guide/ Cultural Tourism
- Vocational Qualification in Wood Processing, Study Programme in Joinery, Joiner
- Vocational Qualification in Horticulture, Study Programme in Horticulture, Gardener

Kalajoki-Institute ARTEMA

- http://www.kam.fi/artema (in Finnish)
- Vocational Qualification in Crafts and Design:
  - Study Programme in Handicraft Design and Production, Artisan, Metal and Woodworking
  - Study Programme in Textiles and Clothing Design and Production, Artisan, Handicraft Tourism
  - Study Programme in Environmental Design and Construction, Artisan, Building
- Vocational Qualification in the Tourism Industry, Study Programme in Tourism Activities, Tourism Activities Organiser

Kalajokilaakso Vocational Education Institution, Nivala

- http://www.kam.fi/kaol (in Finnish)
- Vocational Qualification in Wood Processing, Study Programme in Joinery, Joiner

Kuusamo Vocational Education Institute

- http://edu.kuusamo.fi/toinenaste (in Finnish)
- Vocational Qualification in the Tourism Industry, Study Programme in Tourism Activities, Tourism Activities Organiser
- Vocational Qualification in Wood Processing, Study Programme in Joinery, Joiner

Merikoski Vocational Education Centre

- http://www.merikoski.fi/index_en.html
- Vocational Qualification in Wood Processing, Study Programme in Joinery, Joiner (Liminka, Muhos and Oulu Offices)
- Vocational Qualification in Horticulture, Study Programme in Horticulture, Gardener (Liminka and Muhos Offices)
- Vocational Qualification in Agriculture, Study Programme in Agriculture, Rural Entrepreneur, Orientation in Bee Care/ Horse Care/ Agriculture (Muhos Office)

Oulu Region Vocational College

- www.osao.fi (in Finnish)
- Vocational Qualification in Catering, Study Programme in Institutional Meal Production, Cook/ Institutional Catering, Orientation in Staff Restaurant and Tourism Activities (Haukipudas Office)
- Vocational Qualification in Wood Processing, Study Programme in Joinery, Joiner (Kaukovainio Office)
- Vocational Qualification in Bioenergy (Muhos Office):
  - Study Programme in Field Energy Production and Logistics, Bioenergist
  - Study Programme in Wood Energy Production, Bioenergist
  - Study Programme in Peat Energy Production and Logistics, Bioenergist
- Vocational Qualification in Natural and Environmental Protection, Study Programme in Nature-based Services, Entrepreneur in Nature-based Services (Muhos Office)
- Vocational Qualification in Agriculture, Study Programme in Agriculture, Rural Entrepreneur (Muhos Office)
- Vocational Qualification in Forestry, Study Programme in Forestry, Forest Worker, Orientation in Engines and Entrepreneurship (Muhos Office)
- Vocational Qualification in Horticulture (Muhos Office):
  - Study Programme in Floristry and Horticultural Business, Gardener
  - Study Programme in Horticulture, Gardener
  - Study Programme in Landscape Industries, Gardener
- Vocational Qualification in the Tourism Industry, Study Programme in Tourism Activities, Tourism Activities Organiser, Orientation in Cultural and Nature Tourism (Myllytulli Office)

Vocational Adult Education Centre of Northern Finland

- http://www.psk.fi
- Vocational Qualification in Natural and Environmental Protection, Study Programme in Nature-based Services, Entrepreneur in Nature-based Services (Haapavesi Office)

Pudasjärvi Vocational Education Institution

- http://pamis.pudasjarvi.fi (in Finnish)
- Vocational Qualification in Agriculture, Study Programme in Horse Care and Management, Groom
- Vocational Qualification in the Tourism Industry, Study Programme in Tourism Activities, Tourism Activities Organiser
- Vocational Qualification in Wood Processing, Study Programme in Joinery, Joiner

Ruukki Agricultural Education Institution

- http://www.rmol.fi (in Finnish)
- Vocational Qualification in Agriculture, Study Programme in Agriculture, Rural Entrepreneur, Orientation in Rural Entrepreneurship/ Horse Care and Management
- Vocational Qualification in Agriculture, Study Programme in Agriculture, Rural Entrepreneur, Orientation in Rural Entrepreneurship/ Horse Care and Management (adult education)

Higher vocational education

Haapavesi Vocational Education Institution

- http://www.haol.fi
- A conversion programme financed by ESF (2004-2006) in conjunction with Jyväskylä Polytechnic: Higher Vocational Degree in Tourism and Catering, Degree Programme in Service Management, Bachelor of Hospitality Management, Orientation in Catering and Restaurant Services

Central Ostrobothnia Polytechnic, Haapajärvi Unit

- http://haapajarvi.cop.fi/ (in Finnish)
- The aim is to start Higher Vocational Degree in Natural Resources, Degree Programme in Agricultural and Rural Industries in 2006

Central Ostrobothnia Polytechnic, Ylivieska Unit

- http://ylivieska.cop.fi/
- Higher Vocational Degree in Tourism and Catering, Degree Programme in Travel and Tourism, Bachelor of Hospitality Management, Orientation in Tourism Well-being Services (adult education)

Oulu Polytechnic, School of Renewable Natural Resources

- http://www.oamk.fi/english
- Higher Vocational Degree in Natural Resources:
  - Degree Programme in Agricultural and Rural Industries, Agronomist, Orientation in Product Development/ Environmental Management/ Entrepreneurship
  - Degree Programme in Landscape Planning, Horticulturist
  - Degree Programme in Horticulture, Horticulturist, Orientation in Productisation/ Entrepreneurship

University education (University of Oulu)

EnviroMaP - Master Program in Environmental Management

- http://www.nornet.oulu.fi/environment/DI_maisterikoulu/index.html
- A multidisciplinary master program financed by ESF (2003-2005)

EnviroNet -Graduate School in Environmental Issues (Doctoral Level)

- http://www.nornet.oulu.fi/environment/environet/index.html
- A multidisciplinary environmental graduate net school in University of Oulu
- Six themes (expertise fields of research):
  - Natural resources
  - Industrial ecology, green chemistry
  - Human-made environments and land-use
  - Nature management
  - Environmental informatics
  - Environmental changes and ecologic tolerance

Further vocational education

Haapajärvi Vocational Education Institute, Department of Agriculture and Forestry

- http://www.hai.cop.fi (in Finnish)
- Further Vocational Qualification in Livestock Farming
- Further Vocational Qualification in Livestock Farming for Farming Stand-Ins
- Further Vocational Qualification for Forestry Entrepreneurs
- Further Vocational Qualification for Farmers

Kalajokilaakso Vocational Adult Education Center

- http://www.aiku.ppnet.fi/ (in Finnish)
- Computer Driving Licences A and AB
- Further Vocational Qualification for Entrepreneurs
- Specialist Vocational Qualification for Entrepreneurs

Merikoski Adult Training Centre

- http://www.merikoski.fi/index_en.html
- Computer Driving Licences A and AB
- European Computer Driving Licence
- Further Vocational Qualification in Gardening, 40 cu (Liminka Office)
- Specialist Vocational Qualification for Entrepeneurs

Oulu Adult Education Centre

- http://www.oakk.fi (in Finnish)
- Further Vocational Qualification in Tourism Activities
- Computer Driving Licences A and AB
- Computer Driving Licence A in the web

Oulu Region Joint Authority for Vocational Training, Workplace Education and Training Unit

- http://www.osakk.fi/tpkpalvelut/
- Further Vocational Qualification for Entrepreneurs
- Specialist Vocational Qualification for Entrepreneurs

Oulu Polytechnic, School of Renewable Natural Resources

- http://www.oamk.fi/luova/english
- Professional Specialisation Studies in Natural Resources:
  - Specialized Studies in Rural Construction, 20 cu
  - Specialized Studies in Utilizing Geographic Data in Natural Resources Sector, 20 cu
  - Specialized Studies in Potato Farming, 20 cu
  - Specialized Studies in Interactive Environmental Planning and Planning in Natural Resources, 20 cu
  - Operating in Charge of Quality and Environmental Issues, 30 cu

Oulu Region Vocational College, Haukipudas Office

- http://www.osao.fi (in Finnish)
- Hygiene Training

Oulu Region Vocational College, Muhos Office

- www.osao.fi (in Finnish)
- Further Vocational Qualification for Animal Attendants
- Further Vocational Qualification for Forestry Entrepreneurs

Vocational Adult Education Centre of Northern Finland, Oulu Office

- http://www.psk.fi
- Specialist Vocational Qualification in Rural Development
- Computer Driving Licence
- Further Vocational Qualification for Entrepreneurs
- Specialist Vocational Qualification for Entrepreneurs

Pohjola College

- http://www.pohjolaopisto.fi (in Finnish)
- Further Vocational Qualification in Tourism Activities

Raahe Vocational Adult Education Centre

- http://www.raahenaakk.fi
- Further Vocational Qualification in Agriculture, Livestock Farming Worker, 48 cu
- Further Vocational Qualification in Livestock Farming
- Computer Driving Licences A, AB and @
- Further Vocational Qualification for Entrepreneurs
- Specialist Vocational Qualification for Entrepreneurs

Raahe Business College

- http://www.rpkk.fi/english
- Further Vocational Qualification for Entrepreneurs
- Specialist Vocational Qualification for Entrepreneurs

Reisjärvi Christian College

- http://www.rkropisto.fi/eng/index.html
- Computer Driving Licence

Ruukki Agricultural Education Institution

- http://www.rmol.fi (in Finnish)
- Further Vocational Qualification for Farmers, Potato Production
- Further Vocational Qualification for Horse Trainers

Some examples of supplementary courses

Haapajärvi Vocational Education Institute

- http://www.hai.cop.fi (in Finnish)
- ATB basic and continuing courses (30 h), WWW-pages, Virus protection for computer, Association routines with information technology, ATB programmes for farms, Quality training for farming stand-ins
- Web-courses (1 cu): Society, entrepreneurship and working life knowledge, Sustainable development, E-commerce

Central Ostrobothnia Polytechnic, CENTRIA Research and Development, Haapajärvi Unit

- http://haapajarvi.cop.fi/ (in Finnish)
- Basic course in computer science, Computer Driving Licences A and AB, Making of WWW-pages, E-commerce and establishing e-shop, Basics in e-commerce

Oulu Polytechnic, School of Renewable Natural Resources

- http://www.oamk.fi/luova/english
- Basics in business-oriented landscape and village planning, Training for good forest care, Practical interactive skills for planners, Training for nature care qualification, Seminar about location based services serving rural entrepreneur

Ruukki Agricultural Education Institution

- http://www.rmol.fi (in Finnish)
- Training for using protectants, Basic course of shoeing, Basics for blacksmith skills

- Other educational organisations organising supplementary courses are e.g. Summer University of Northern Ostrobothnia (Oulu, Kuusamo, Pyhäjärvi, Raahe and Ylivieska Offices), Open University, Open Polytechnic Learning Network AVERKO and Folk Colleges.

- Most of the advisory organisations presented above organise training too.

- Also projects are remarkable trainers.

The Role of Information Technology in Mediating External Information to the Rural Micro Enterprises – Regional Literature Review, Central Finland

Jyväskylä Polytechnic, Institute of Natural Resources

Jaana Auer
Juha Kuula

1 Enterprise Culture of the Small and Medium-Sized Enterprises in the Region

1.1 Central Finland and SME Profile in the Region

The region of Central Finland is situated according to it's name in central part of Finland. The region consists of 6 sub-regions and 30 municipalities (see figure 1). In 2003 there were approx. 265 000 inhabitants in the region, of which over a half (approx. 160 000) lived in Jyväskylä region. In 2003 the population increased in Jyväskylä region but decreased in every other sub-region. (Keski-Suomen toimialakatsaus 2004.) The main city of the Central Finland region is Jyväskylä. Also the surrounding municipalities are strongly influenced by the city of Jyväskylä. The business life in Jyväskylä sub-region is concentrated on services. The other significant fields of industry are machinery, furniture production, education services, ICT services, graphic industry and tourism and accommodation sector.

In the 80´s, Keski-Suomi was not performing as well as many other growing regions in Finland. Jyväskylä had an image of just an ordinary Finnish town. The 90s brought a new growth period. The big university and industrial growth in electronics, graphic and machinery industries have attracted well-educated people continually to move into the region. During the past decade Jyväskylä sub-region has significantly increased its population. (Lakso, 2002.)

Nowadays, central town of Keski-Suomi–Jyväskylä–has been identified as one of the growth centers in Finland. It is the tenth biggest town in Finland. It has positive image as a location of the electronics and IT companies. There is a multidiciplinary university in the town and it is attracting young people from all over the country. The Technology Park of Jyväskylä is aiming to connect the information technology, psychology and pedagogics. (Lakso, 2002.)

Southern Central Finland consists of Joutsa and Äänekoski sub-regions. The amount of inhabitants was approx. 69 000 in 2003. Forest related industries (paper industry, wood product industry) have a very significant role in this part of Central Finland, which reflects also to the economical development of the area. 1/3 of the jobs in the region are in processing industry. The biggest city in the area is Äänekoski. Southern Central Finland is mainly consisted of rural regions. (Keski-Suomen toimialakatsaus 2004/2)

Saarijärvi-Viitasaari region covers the northern part of Central Finland. In this sub-region the wood processing industry has a strong role. In addition the primary production provides still 1/5 of jobs in this region. In 2003 there were approx 36 000 inhabitants in Saarijärvi-Viitasaari sub-region. (Keski-Suomen toimialakatsaus 2004/2)

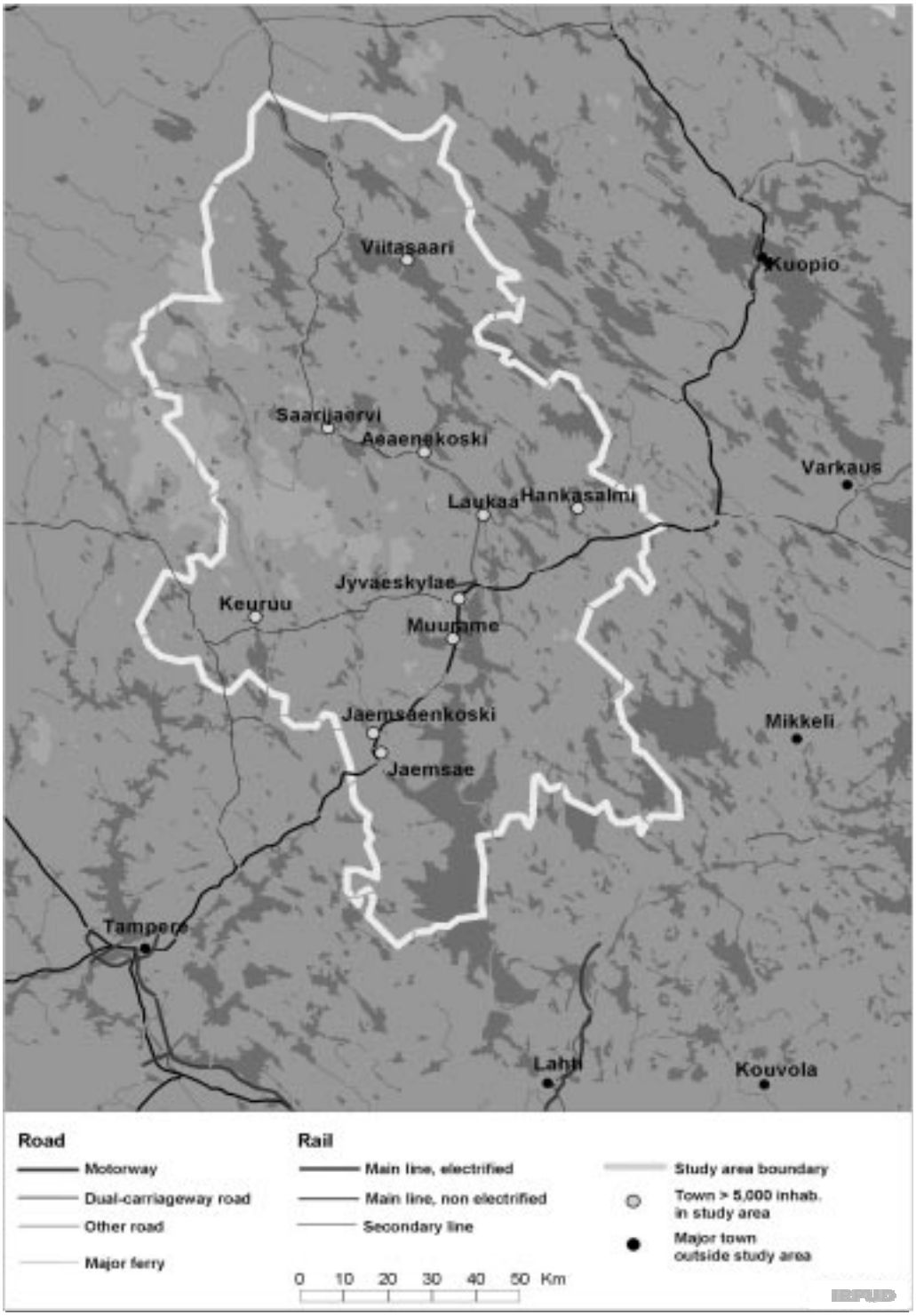

Figure 1. *The region of Central Finland.*

In Northern Central Finland the tradition for small and micro entrepreneurship is quite thin due to the long history of existence of big and widely employing productive companies in the region. In 1997 about 30 % of the 12 000 of empolyed people in Northern Central Finland subregions were enterpreneurs. The total number includes also farmers, whose proportion is 23 % of the jobs (2 775 jobs). (Keski-Suomen Tavoite 1 -ohjelma 2000)

There were 1 839 enterprises in Northern Central Finland at the end of the year 2002 (www.keskisuomi.fi). The most of the enterprises are very small. The number of staff is 1,5–2,6 per enterprise depending on the municipality. The average in whole Finland is 4,4. The trend in development is, that the new jobs emerge in private sector. SMEs play a very important role in employment, especially since the number of farmers is continuously decreasing and the number of employees in public sector has been estimated to stay at the present level or is decreasing a bit. (Keski-Suomen Tavoite 1 -ohjelma 2000)

In the southern Central Finland (Jyväskylä, Jämsä, Kaakkoinen Keski-Suomi, Keuruu ja Äänekoski sub-regions) there were 8 985 enterprises in 1997. The number of enterprises increased in all sub-regions of the area and especially the development has been very strong in Jyväskylä region. There were 80 445 jobs in 1997 in Jyväskylä region. Jobs are increasing in services and processing, but were decreasing in primary production. (Keski-Suomen Tavoite 2 -ohjelma 2000)

In Central Finland region there were 11 591 places of business in 2001. Almost one half of them situated in Jyväskylä region. During the years 1993–2001 the number of enterprises grew most efficiently in the sub-regions of Jyväskylä, Jämsä and Äänekoski, the growth being over 20 %. But it can be said that the positive development has spread only over the industrial areas in Central Finland, because in the other regions the growing rate has been below 10 % and in the south-eastern sub-region of Central Finland the number of enterprises has even decreased. (Keski-Suomen maakuntaohjelma 2003–2006, 2003)

In Central Finland the share of agriculture and forestry of the jobs and the share of the gross national product is higher than the average in Finland. In 1999 there were 4 190 active farms, of which 54 % had animal husbandry and 37 % milk production. There were 89 500 ha arable area, which is 4,2 % of the total arable land in Finland. On an average farm in Cenral Finland, there were 22 ha arable land (average in Finland 28 ha). A great number of the farms in Central Finland are multifunctional farms. Most of the income comes from milk production and forest resources. Milk production covers 67 % of the gross return (50 % in whole country), beef and veal production approx. 17 % (11 % in whole Finland). (Keski-Suomen Pk-elintarvikealan kehittämisohjelma 2001–2006)

In Central Finland there were 208 enterprises upgrading foodstuffs in 2000. 77 of them were bakeries, 21 processed meat, 17 processed vegetables and 13 were upgrading milk products. The enterprises are relative small in size. One third of the enterprises employed 1–2 persons, only 10 had over 20 employees. Also the outputs are relative small and products are targeted to local markets or to other restricted markets. 30 % of the enterprises are less than 5 years old. It has been estimated that food processing employs about 1 400 persons

full-time and 250–500 persons part-time at the moment in Central Finland. (Keski-Suomen Pk-elintarvikealan kehittämisohjelma 2001–2006)

Concerning the nature based entrepreneurship according to Rutanen and Luostarinen's research (2000), the possibilities for nature-based entrepreneurship have been noticed in Central Finland region relatively early comparing to other parts Finland (excluded Lapland). The actors in the field see that the networks have started to develop and have established concrete co-operation, even there are significant differences between sub-regions. Saarijärvi-Viitasaari was seen as the most active sub-region in developing small entrepreneurship based on nature. In the whole region, especially rural and nature tourism was seen as positive growing sector, even the traditions for small entrepreneurship are not so strong in the region due to long history of big productive companies in the region. (Rutanen and Luostarinen 2000).

Tourism has been especially growing sector in the region. The tourism enterprises in Central Finland are quite small in size. Turnover is below 168 000 EUR in 53 % of the enterprises and 168 000-336 000 EUR in 31 % of the enterprises. The total income from tourism in Central Finland was 176 million EUR (2,3 % of the turnover of all industries) and tourism sector employed 1 976 persons (3,8 % of the total employment) in 2002. 33 % of the enterprises in tourism sector had only one full-time employee, 35 % employed 2 persons, 15 % had 3-5 persons at work and 17 % had over 5 employees. (Keski-Suomen matkailuelinkeinon strategia 2002–2006, 2002)

In Central Finland the registered accommodation capacity was 3 593 rooms and over 10 000 beds. Most of the capacity is situated in Jyväskylä. Smaller amounts are concentrated in Jämsä, Keuruu and Saarijärvi. It is estimated that there are about 300 rural tourism enterprises in Central Finland, 9 % of them being full-time enterprises. They have about 7000 beds in use. The utilisation rate of the registered capacity is 45,7 % , which is lower than the average rate in Finland. (Keski-Suomen matkailuelinkeinon strategia 2002–2006, 2002)

In Central Finland there are several significant enterprises providing activity services for tourists and as subcontractors for other tourism companies.Turnover of these companies is mostly below 168 000 EUR. 60 % of these enterprises employed permanently one or two persons in 2002. Enterprises are guite young, over 60 % has started in 1990 or later and they are mostly located in Jyväskylä region (34 %). 19 % of these companies are located in Saarijärvi region, 14 % in Jämsä region and 11 % in Äänekoski region. The most common activity services offered are fishing, rowing, paddling and hiking/walking. (Keski-Suomen matkailuelinkeinon strategia 2002–2006, 2002)

The most important market areas for tourism enterprises are domestic markets. 90 % of the accommodation enterprises see that domestic markets outside Central Finland region is the most important market area. Enterprises providing activity services consider their own region (Central Finland) as the most important market area for them. (Keski-Suomen matkailuelinkeinon strategia 2002–2006, 2002).

1.2 Development Activities in the SMEs in the Region

In Central Finland there has been carried out several development activities for enhancing the development of SMEs during the past few years. Central Finland has access to both Objective 1 funds (northern part of Central Finland) and so called Alma (Alueellinen maaseutu-ohjelma, regional rural programme) funds (southern part of Central Finland). In addition to those and different kind of national funding, there are available e.g. Leader +, ERDF and ESF funds. The development funds of Central Finland are allocated to development of know-how, metal industry, mechanical wood processing and tourism.

In the following there are listed some examples of those development projects, related to promoting diversified farming or nature-based entrepreneurship and the use of ICT technologies in rural SMEs.

1.2.1 Development programme of food processing SMEs 2001–2006

The aim for this development programme is to guide development activities in SMEs that have foodstuff production in Central Finland. The development activities emerge from the preliminary study of the present state of the trade in Central Finland.

To achieve the targets stress has been put on the following activities:

- development of the near-food chain
- quality development
- product development
- enlargement of the market area of foodstuff produced in Central Finland
- development of business skills and entrepreneurship
- development of image of near-food in Central Finland

The programme has its own website in the Internet address: www.ruokacentria.com/yrittajat/kehittamisohjelma.htm

1.2.2 The preliminary study of broadband in sparsely populated areas of Central Finland

Quick information and communication connections are playing a very important role in developing the rural areas of Central Finland. The good access to ICT connections has been estimated also to promote the establishment of new businesses in the rural areas. In order to make the broadband wider, the Employment and Development Centre of Central Finland made a preliminary study of developing the broadband in rural areas. In the report there is a description of the present state of broadband in Central Finland, possible pilot projects and models for organising the activities. The study was carried out during 1.1.–24.5.2004. (Luomala 2004) More of the results of the study are presented in chapter 2.1.

1.2.3 Central Finland's countryside know-how (Maaseutu osaa) project

This project is administered by the Employment and Development Centre of Central Finland. The project aims to develop know-how and advisory skills of rural experts, increase co-operation and interest of young people towards rural businesses. The project arranges also computer trainings. The target groups are farmers, forest owners, rural entrepreneurs, rural advisors and young people interested in rural occupations. For example the project has arranged for farmers basic courses in computer skills and also training for usage of occupational computer programmes. In addition the project has held courses for farmers in applying EU-subsidies, information occasions, study trips ect. Over 500 persons have participated to this project, which indicates a relatively good coverage among rural entrepreneurs. (Keski-Suomen Maaseutu Osaa -projektin väliraportti -pohjoinen Keski-Suomi, 2004, Keski-Suomen Maaseutu Osaa -projektin väliraportti – eteläinen Keski-Suomi, 2004)

1.2.4 Successful rural enterprise project

This project was administered by Pro Agria Central Finlands Advisory Centre. In Objective 1 -area (includes only 9 municipalities) this project arranged 93 days of training in computer skills. Subjects in trainings were e.g. bookkeeping, cropping plans (in e-form), registration of animals, planning of animal feeding, www-home pages, Internet, email, banking and spreadsheet programmes. Also business and management skills were included to the course. In addition the project has kept information meetings and has provided consultation of benefits of using ICT in rural enterprises.

In Alma region (southern part of Central Finland) this project held 100 days of training in computer skills in the same subject as earlier mentioned. In total there has been approx. 600 participants taking part in those trainings, which indicates 14–17 % of all farmers in the region. (Menestyvä Maaseutuyritys -hanke 2004)

Also the municipalities and smaller sub-regions have been active in development activities related to promoting the use of ICT in small rural SMEs. The following examples are typical kind of training projects targeted to rural SMEs.

1.2.5 ICT for entrepreneurs project

In municipality of Kyyjärvi there has recently started a two years project called "ICT for entrepreneurs". The local association of entrepreneurs is the lead partner of the project. The aim is to develop the computer skills of entrepreneurs and to increase the usage of ICT in business. The funding comes from Leader+ programme. The training subjects are office programmes, Internet, email and making and updating own web sites. The training is methodologically close to personal consultation and takes place in enterprises using the ICT equipments of the enterprise. The first report was executed in January 2005. (Lillvis 2003.)

1.2.6 Developing the information society skills of rural entrepreneurs in Karstula, Kivijärvi and Kyyjärvi

The aim of this project is a bit similar to those of the previous project. The project aims to make the participants acquainted with the possibilities of information society. Through training the participants will get basic computer skills. By personal consultation the usage of computer at home or at work will develop to a more efficient level. It's expected that the rural entrepreneur will be able to use different programmes, to solve most common problems in computer equipment, to exploit Internet, email and other programmes in his business. (Karstulan, Kivijärven ja Kyyjärven maaseutuyrittäjien tietoyhteiskuntataitojen kehittäminen -projekti. Hankesuunnitelma 28.4.2003)

Since the project started in autumn 2003, there has started 2 training groups, one in Kivijärvi and one in Karstula. During the spring 2004 the participants had the possibility to take part into audited computer users tests (@-card or A-card). Over 50 % of the entrepreneurs participating into project have also taken part into the test. (Hiltunen 2004.)

1.2.7 Developing ICT- and Information Skills Project in Kinnula

The aim of this project was to train rural entrepreneurs in computer skills and to solve typical problems in device, programmes and web connections. Also in this project the trainings took place at participants´ home or at work. In addition the project aimed to inform the entrepreneurs of the e-services they could benefit in their business. 17 persons from Kinnula (municipality level) took part into this project. The subjects of the trainings were basic computer skills, organising the files of the computer, using Internet and banking programmes, virus control and data security. (ATK-osaamisen ja tiedonsaannin parantaminen koulutushanke 2004.)

1.2.8 Tailored Training in Central Finland

Laukaa Ties Ltd. arranged in 2003 tailored training on computer skills to enterprises. This project was funded by the Employment and Development Centre of Central Finland. 71 enterprises from municipalities of Jyväskylä, Jyväskylän maalaiskunta, Muurame and Laukaa took part in these trainings, 482 employees were trained during 1 477 working days. The subjects of the trainings were Microsoft Office, Visual Basic, email and creating own web sites and updating them, Lotus Notes system, personal consultation on purchasing computers and implementation. (Mattila 2004.)

There are also plans for developing a regional portal for Central Finland region during the next few years. This portal aims to develop information delivery and interaction within the region between different kinds of focus groups. In implementing this portal, there are also plans to use educational support activities.

2 SMEs and ICT

2.1 Use of ICT in the SMEs and Functions Supported by ICT

In 2002 Niemi researched in his study, what kind of e-services SMEs have used in Central Finland region and what are the experiences from them (how useful those services were). If enterprises had not used any e-services, they were asked, how useful that service might be in their business. The research covered all SMEs in the region. 15% of respondents (n=105) were in industry, 19 % in trade and 64 % in services. 30 % of these enterprises employed under 10 persons, 48 % had 10–49 employees and 17 % had over 50 persons at work. In this light, when considering the results, must be remembered that the figures are probably more positive than among small rural SMEs in the region. (Niemi 2002.)

Only one of the enterprises told that they did not have a computer. 95 % had computers and also Internet in use. 68 % of enterprises had 1–3 computers in use, 17 % had 4–15 computers and 11 % had more than 16 computers. In 26 % of the enterprises the Internet connection was modem based, 45 % had ISDN-connections and 26 % had an ADSL or broadband connection. Enterprises that had ADSL or broadband Internet connection saw the benefits of intranet more significant than those who had only a modem connection.

18,4 % of the enterprises had also used intranet in their business and saw it quite useful. The average ranking was 4,26 when the scale was 1–5, where 1 ment totally unnecessary or needless and 5 ment extremely useful or necessary. Those enterprises who had not used intranet (81,6 %) saw it significantly unnecessary (average ranking 2,38). Only 6,2 % of the enterprises had used extranet. The trend was similar to attitudes towards intranet: those who had extranet in use saw it quite useful (average 4,43) and those who hadn't did not see it necessary (average 2,22). 27 % of the enterprises had some kind of a teamwork programme in use and the experiences were quite positive (average 4,15). Those were mainly bigger companies.

Email was in use in 97,1 % of enterprises and they saw it quite useful. In bigger firms (50 or more employees) it was seen more useful (4,83) than in smaller firms (when 1–9 employees, the average was 4,00 and in companies with 10-–49 persons 4,5). Also the email was seen more necessary in enterprises, that had more computers and faster Internet connections.

Internet was mainly used to transmit information (87,4 % of the enterprises) and it was seen to fit for that purpose quite well (4,42). The trend correlated with the amount of employees, computers and faster Internet connections.

According to Niemi, wireless services were not very known in the enterprises in Central Finland region. Only 14,6 % had used wireless services in business and the evaluation of their usefulness was 3,73. As wireless services were mentioned services like SMS-messages, email and fax. The rest of the respondents (85,6 %) felt those services quite unnecessary (2,25).

59,6 % of the enterprises had their own web sites in Internet and they saw it quite useful (3,87). Most of the enterprises (81 %) had their web sites on an external server. Only 19 % had them on their own server. Bigger firms saw the web sites more useful than smaller firms.

Table 1. *The use of internet in SMEs in Central Finland region according Niemi's research (2002).*

Activity	Amount of SMEs (%), that have used internet for activity in question	Average ranking of the usefulness of Internet for the activity in question (users), where 1= totally unuseful and 5=extremely useful	Amount of SMEs that have not used internet for activity in question	Average ranking of the usefulness of the Internet for the activity in question (not users) where1=totally unuseful and 5=extremely useful
Supplying their customers products and services	21,8	3,73	78,2%	2,51
Recruiting staff	35,0	3,53		
Benchmarking, following up the activities of competitors	51,0	3,26		
Follow up the development of technology	54,9	3,71		
Follow up news and current issues	72,8	3,64		
Order products and services	42,7	3,59		2,17
Transactions with authorities	44,6	3,87		
Online banking, payment traffic	55,0	4,69		2,33
Search services	68,3	3,75*)		

Source: Niemi, P. 2002. Verkkovälitteisten palveluiden…

*) Enterprises in the trade sector (4,33) experienced the searching services via Internet much more useful than enterprises in service sector (3,59).

As a summary of Niemi´s research can be stated, that SMEs in Central Finland use quite much e-services and see them quite useful. In this research a correlation was found between the usefulness of e-services and the company size. The more employees, the more computers, and the better telecommunication connections an enterprise has, the more necessary the e-services were seen. The most important factor was the quality of telecommunication connections. Without en exception, those companies that had used e-services saw them more useful than those that hadn't. No significant differences in service experiences were found between different business sectors. (Niemi 2002)

Palokangas made in 2003 a research of farmers in Central Finland in order to find out the use of ICT and automation. 40 % (n=247) of the farmers used computer on daily basis (all usage) and 39 % used it weekly. 7 % of farmers did not have a computer and 6 % did not use it, although they had one in the farm. When the farm had arable land over 66 hectars, majority of the farmers used computer daily, on smaller farms (0–35 ha field) and on middle sized farms (35–65 ha field) most of the farmers used computer on weekly basis. On dairy farms computer was used more on weekly than daily basis.

Computer was put to use also in business. 46 % of the farms use computer weekly in their work. 15 % used computer in work daily and 13 % farmers did not use computer in their work at all. Computer was put to use in bookkeeping, field parcel bookkeeping, animal registration and banking. The most all farmers used specific programmes for agriculture, secondly Internet and thirdly email. After those came word processing, spreadsheet and banking programmes.

82 % of the farmers in Central Finland had some kind of crop planning programme. In 54 % of cases it was WISU. The second used ones were Agrineuvos (21 % of farms) and Peltotuki (18 %). 61 % of the farms had a programme for animal production. The most common programmes were Win Elmeri (59 % of the farms) and Win Ammu (31 % of the farms). Bigger farms and farms with animal husbandry usually had two different programmes for animal production. 78 % of the farms had also a programme for economical control and bookkeeping. The most commonly used were Maatalousneuvos (39 % of the farms) and Wakka (38 % of farms). Only 6 % of the farms had some kind of programme for forestry. (Palokangas 2003)

In 2001 Keskinen & Toivainen made an extensive survey on rural tourism enterprises in Central Finland and researched the use of Internet. They got answers from 59 enterprises. 61 % of the respondents had email in use and 37 % did not have. Rural tourism enterprises taking part to the research were very small. On the average they had 2 employees. 44 % of the enterprises were farms that ran also farm tourism business. The average turnover was 78 144 EUR. The majority of the firms (45 enterprises) offered accommodation services, 23 enterprises offered catering services and 25 had activity services. Most of the enterprises (47 %) read their email daily. 36 % of them read it 2–5 times a week and 14 % read it once a week. Only 3 % read it less frequently than once a week.

59 % of the respondents had their own web sites and only 23 % of those, who had websites had supplied the customer the possibility of making reservations by using them. 9 % of the enterprises updated their web sites monthly while the majority (64 %) updated them more seldom. Almost every enterprise had some business information of his/hers own enterprise in various pages in Internet. More commonly the information was found on the web sites of their own municipality (39 enterprises) or on the web sites of their own county (23 enterprises). Less frequently it was found on nation-wide marketing pages, such as Loma Suomi web site (18 enterprises) or Suomen majoitusliikkeet web site (18 enterprises). The main reason, why the enterprises prefer the sites of their own municipalities, was that they are free of charge. National portals on the other hand are usually chargeable. The reason could have also been

the lack of knowledge of the nation-wide web sites and that they were not seen appropriate to entrepreneurs own businesses.

According to this research, 63 % of the enterprises had got customers via Internet, 19 % had not and 19 % could not say. At the moment the information of rural tourism enterprises of Central Finland is located dispersed on many different pages and portals. That causes problems to allocate marketing activities to right market segments.

The majority (73 % of enterprises) was interested in taking part in concentrated Internet web sites, where it would be possible to find information on almost every rural tourism enterprise in Central Finland. 53 % of those enterprises interested in joining the mutual Internet pages wanted also facility bookings to be attached to those pages. Enterprises were willing to pay of being in joint pages: 44 % are ready to pay 17–50 EUR/year and 32 % will pay 50–100 EUR/year. So, although entrepreneurs want to have a versatile contents of the web sites, they are not willing to pay that much for the service.

The average marketing budget for these companies was 1948 EUR/year and a median 840 EUR/year. This budget broke up to different market channels as follows:

- own brochure 7 %
- advertisement 37 %
- trade fairs 13 %
- direct-mail advertising 7 %
- Internet 17 %
- and other ways such as county brochure 19 %.

This reflects quite well the limited resources of these small rural companies.

In rural tourism enterprise sector in Central Finland there are a strong belief in electronic marketing. 68 % of the enterprises thought that the importance of Internet in rural tourism marketing will increase notably, 22 % thought that it will increase a little and only 7 % of the enterprises figured that Internet will not affect their branch at all. (Keskinen & Toivainen 2001.)

According to Luomala's (2004) preliminary study of developing the broadband penetration in rural areas, conclusions of the current infrastructure and the future possibilities in rural areas of Central Finland can be described as follows:

1. The used technology allows to connect all households to the network at the present. The needed satellite and DSL-technology is available and it can be extended to almost every place in the rural areas. The satellite technology has been until now quite expensive in use. By using DSL technology there will not be increase in service supply in the near future on a large scale. At this moment about 70–80 % of the households in Central Finland can be connected in DSL-based broadband channel. The geographical coverage would be in that case 40–50 %.

2. Different broadband technologies are still at the beginning in their life cycle. Although DSL and cable-modem technologies are world wide market leaders, it is only a question of time when new technologies (satellite, radionet) come into common markets. All technologies will develop rapidly in future. Operators are already aware of the possibilities of the different technologies in the future and are taking into consideration the trend in their own product/service supply. At the same time operators want to maximize the use of existing infrastructure.

3. Next generation of distribution techniques and system architectures are rather complicated and will develop fast. These new techniques (especially radionet) have already been tested in different pilot projects in the region. In Central Finland there has been two pilot projects. The pilot projects have been a good way to get experience, not a mean to establish a volume based service supply.

It is estimated that by the end of year 2005, in nation wide 90–95 % of households that are connected to telephone network, could be connected to broadband channel. The national broadband strategy will increase that proportion a little bit more. In Central Finland the figure will stay at a lower level (approx. 85 %) without any support actions. (Luomala 2004.)

In the light of the regional literature can be said that the use of ICT correlated strongly with the size of the company in Central Finland. Practically all SMEs use computer and Internet in their business actions, even though the extent of the use varies a lot.

2.2 Attitudes towards the Use of ICT

According to Palokangas (2003) older farmers and farmers with small farms feel that in the future ICT and automation go against their grain. Many of the respondents thought that they are too old to learn new things and they want to leave the development of the farm to younger generations.

Dynamic electronic markets and Internet-economy consists of some characters that will promote to wider concentration of economical activities. If consumers order products and services in continually increasing amounts via Internet geographically from far, enterprises that offer services and products in the neighbouring area are under a much stronger competition. The local markets are not anymore local. Actors in electronical markets aim to concentrate also their physical activities to places, where they can gain agglomeration benefits and synergy advantages with other actors in the production/marketing chain. Also the need for highly educated personnel leads to greater level of concentration. In addition availability of different services for enterprises promotes concentration development. In summary, although the electronical business can provide many new possibilities to rural areas, according to Ovaskainen and Ritsilä changes in value- and delivery chains probably lead to increasing concentration of economy to growth centres. (Ovaskainen & Ritsilä 2001.)

According to Niemi´s research (2002) SMEs in Central Finland are quite active users of Internet and e-services. The activeness is likely to increase in the future because e-services are bit by bit becoming a part of the basic business activities in SMEs. The attitude of SMEs is open to new technologies and they are willing to take it in use, although ICT brings new costs. Also the attitude of the service providers toward new e-services should be practical. The actors offering e-services to enterprises ought to build services that will give support to enterprises in their basic business activities, and not to offer services only for technology´s sake. In this way the quality of e-services would rise as well as the utilization increase. (Niemi 2002.)

2.3 Benefits of ICT to the Rural SMEs

Palokangas (2003) found out in her research that 83 % of the farmers saw that they benefit from using ICT in daily work. 14 % of respondents did not see ICT bringing any benefits to them. E.g. one respondent's opinion was that ICT can cause both benefits and disadvantages. Farmers felt that they could save time in paperworks if the computer programmes are funtioning properly. On the other hand, as disadvantages some farmers mentioned that the time they have to spend with computer while learning computer skills and new programmes is much longer than filling up the paper forms. They often spend also their spare time at the computer. As a one significant benefit, the farmers saw that the transfer of information has become easier and faster. Also they need less paper, which was seen as an advantage. (Palokangas 2003.)

In Koppinen´s research SMEs in Keuruu sub-region felt that they would benefit the most from the broadband connections in marketing their products. Also in research and development relating to their businesses, the acquisition of information and purchasing inputs broadband was seen to be useful. Fast and reliable telecommunication connections have been noticed to increase competitiveness of SMEs and diversify entrepreneurship. If the broadband connections would be available in sparsely populated areas, it could increase telework, bring new citizens and welfare to those areas. (Koppinen 2003.)

2.4 Barriers of the ICT Utilisation in the Region

Most important barriers of the Internet utilisation in Central Finland are basically the same than in the rest of the country: the lack of know-how on using Internet, the poor profitability in e-business and lack of suitable business ideas for electronic commerce. Other factors that affect in Internet utilisation are small number of potential customers and business partners and security problems. (Karttunen ym. 2000.)

According to Niemelä (2004) SMEs are interested in exploiting wireless technology in their business, but enterprises feel it difficult to find capable actors to offer appropriate e-services.

In Koppinen´s research SMEs in Keuruu sub-region felt modem and ISDN-connections unsecure and too slow (the connections are cut for too long periods and too often) for their operations.

Most of the SMEs would take broadband in their use, if it would be available. In Keuruu 56 % of the enterprises were willing to pay 50 EUR/month or more for the broadband, in Multia the same proportion was 45 % and in Petäjävesi 43 %. SMEs feel that the monthly payment can not be higher in sparcely populated areas than in densely populated areas and operator ought to charge the same payment all over the country. Different kind of payments were seen as an insult towards the people living in remote areas. (Koppinen 2003.)

Farmers criticized that changes in special farming ICT solutions come too often. As soon as one has learned to use the programme, a lot of new changes appear in the next update of the programme (Palokangas 2003).

2.5 Policy Support and Steering of the Use of ICT in the Region

The significant role of ICT and the needs to enhance the use of ICT are mentioned in the Regional Plan of Central Finland (Keski-Suomen maakuntasuunnitelma). ICT development has been listed as one critical factor in successful development of the region in future. In addition to improving ICT skills and connection in the region, also improving Internet services for entrepreneurs are mentioned. (Keski-Suomen maakuntasuunnitelma 2002.)

A lot of development projects are going on in Central Finland concentrating on enhancing the use of ICT. Those projects are based on regional development programmes and mainly financed by EU, state or local funds. See e.g. chapter 1.2.

Concerning rural tourism, which is one realistic alternative to farming, in Central Finland region there have been made extensive efforts to pull together the sector and co-ordinate the development activities according to the regional objectives. The tool in achieving this goal has been a theme programme for rural tourism in 2002–2005, called The Country Holidays Development Programme in Central Finland. The programme has been mainly funded by different kind of project funding. (Keski-Suomen maaseutumatkailun teemaohjelma, 2004.)

The project for the theme program for rural tourism in Central Finland has been divided in two parts: the pre-clarification and the project itself. The first part ended in June 2002 and the actual project started in July 2002. During the project the need for permanent co-ordination for rural tourism sector in the region came clear. The goal for the project is to collect together the rural tourism enterprises in Central Finland and create a development strategy, which could join several projects together. (Keski-Suomen maaseutumatkailun teemaohjelma, 2004)

In order to implement the theme program for rural tourism in Central Finland a project called SaViMa has been started in Saarijärvi-Viitasaari region. The aim of the project is to research tourism marketing in Finland and abroad. The project will continue to the end of 2006. Partners in this project are the 30 most important tourism enterprises in northern Central Finland (Saarijärvi-Viitasaari region). Marketing actions will be developed together with sales offices, travel offices and in coming offices. The aim is to find a suitable networking

model between the producers, travel and sales offices and customers. The project aims to create tools to be used in marketing and sales activities, increase the proportion of electronic marketing and customer-orientated working methods. During the project e.g. www-pages will be designed for each enterprise with efficient links to other Internet pages. One main goal in the project is to increase SMEs knowledge on updating their own home pages. The project also delivers SMEs more information on the use of Internet as marketing tool. (Piispanen 2004.)

3 SMEs and Existing e-Expert Services in the Region

Mainly the e-Expert Services that are used in Central Finland are the same as in general in Finland. However, in addition to national e-expert services, in Central Finland there are some Internet services planned especially concentrating on the region. The list includes both public and private services.

Palveluapaja.net
This is an Internet service, which makes it possible to search agricultural machinery contractors and other agricultural services. At the moment most of the entrepreneurs are from Ostrobothnia and Central Finland. (www.palveluapaja.net)

Sportum Ltd, (www.sportum.fi)
Sportum Ltd from Jyväskylä deals with IT-business, produces www-based solutions for the needs of enterprises in the tourism and leisure sectors. The solutions aim to improve the function, trade and customer satisfaction. The product range contains e.g. electronic marketplace TravelNet and www-based tools for controlling the information at the marketplace. Sportum Ltd offers also work-package for electronic marketing, customer information control and management of reservations and invoices.

Ilkka Lilja Ltd
Ilkka Lilja Ltd was developed 1988 in Jyväskylä and concentrates in weather and transport information systems. They provide suitable tools to over 10 countries for professional and personal use in branches of weather and environment, e.g. weather stations, lightning detection systems and many types of censors and transport loggers. They also offer other services as weather history, assessment of damages caused by weather as well as training courses. (www.iloy.fi)

Crystal Koulutus Ltd
Crystal Koulutus (=education) Ltd is situated in Laukaa. It offers education for entrepreneurs about information technology and financial management. The supply of courses consists of courses like "driving licence of computers" and utilisation of computers in financial management. (www.ties.fi)

LUMA (Nature and fitness travelling data base systems) (www.luma.fi).
LUMA is a nationwide computer based geographic information system, which contains information about Finnish rural tourism enterprises offering nature services and activities combined with the accommodation. The database contains contact information, available activities and other information. The database and portal were developed by Jyväskylä University. It offers the possibility for the tourism enterprises in Central Finland region to buy a licence to TravelNet-programme and to create and update their business information in Internet. This e-marketplace is a product of Sportum Ltd located in Jyväskylä.

Ruokacentria (www.ruokacentria.com)
The Internet pages for small and middle sized food enterprises in Central-Finland. At the pages can be found information about entrepreneurs and products, development of the food sector and current happenings.

Fishing place guide to Central Finland (www.kalapaikka.net/keskisuomi)
The guide contains exact information about the places for fishing in Central Finland. The local enterprises can also use the pages for advertising their products and services.

www.matkamaalle.com
The www-pages of the Country holidays development programme in Central Finland project. The service contains large amount of information for the entrepreneurs to utilise in their businesses. The service also includes information for the advisors and developers working in the tourism sector. In addition the service contains a wide register of regional tourisms experts, a market place for products and services of the entrepreneurs and also a discussion forum for different actors. The technical solutions also take into account the level of the users' equipments.

www.keskisuomeen.fi
The web portal for marketing rural tourism in Central Finland.
The portal was created by MAAMA project (marketing project for the rural tourism in Central Finland). The pages serve as marketing channel for the enterprises in Central Finland taking part to the project.

The tourism portal of northern Central Finland (www.luonnonvoimaa.net).
Products and services of different enterprises are listed and booking facilities. With the TravelNet tool information on the enterprises will be available also in LUMA data base (www.luma.fi).

4 ICT Know-How of the SMEs

4.1 The Present State of Know-how and Awareness of the Possibilities Offered by ICT Solutions

Enhancing the ICT skills of SMEs has been one of the main development activities among rural SMEs in Central Finland. The locally organised computer courses are explained more in details in chapter 1.2.

As a part of the tourism strategy in Central Finland, an extensive Travelli survey was completed in 2002. The Travelli survey studied the knowledge of 75 tourism enterprises (also rural tourism was included) from the Central Finland region. The survey was made for the use of enterprises and projects in future development activities. The aim of the survey was to describe the current know-how in tourism, it's quality and ´need-to-know' topics at three levels: individual, organisation and the whole tourism sector. The sectors of business knowledge were divided into three main groups of knowledge:

- basic skills of the individual and the enterprise
- knowledge supporting success in the tourism business (business research knowledge, knowledge on electronic marketing and communication skills)
- core know-how on tourism sector (knowledge on product development, marketing and networking skills).

According to the survey the individual and enterprise level know-how profiles are rather divergent, except the business knowledge. The biggest individual deficiencies seemed to be in the networking skills, especially if the tourism was a secondary source of income for the entrepreneur. The deficiencies were also found in the computer skills, and the knowledge level on them varied a lot between the companies/individuals.

Only very few individuals saw (based on the self-assessment) that they had in general good or excellent knowledge base. Most of the individuals had some need to develop their skills and knowledge. However, their knowledge potential was wider that was actually used in the enterprises' business actions. Some of the individual knowledge potential remained unused. The survey also revealed that even the individuals working full-time with tourism might have good skills e.g. in networking, those do not actualise in enterprise level. It was also concluded that the high education on the field of tourism was not enough to ensure the success in the business.

Good individual knowledge was estimated in communication skills and especially in oral communication. The individuals spoke several foreign languages, but it must be kept in mind that in this survey the skills were only evaluated by the self-assessment.

The part-time workers had the most weaknesses in the knowledge of trade when considering whole enterprises. However, on individual level those skills seemed to be in a good level as well as communication skills.

Even in individual level the communication skills and the knowledge on trade were estimated high by entrepreneurs. This was the case in the sector level (tourism in Central Finland). The biggest deficiencies were noticed in networking, marketing, product development, communication and computer skills.

In enterprises providing accommodation, the knowledge in general was mainly better on the individual level than on the enterprise level, when catering enterprises had rather good knowledge base on both individual and enterprise levels (apart from the computer skills). In enterprises providing different kind of activities there was clearly a lack of basic knowledge of tourism business in general.

The survey can also be studied based on the line of business. The business sectors were divided in four groups according to the products of the enterprises: accommodation, catering, activities and other (not clearly belonging to any group mentioned above).

Table 2. *The knowledge level in tourism SMEs in Central Finland region. (1= hardly any knowledge, 2 = some knowledge, 3 = good knowledge and 4 = excellent knowledge).*

	Trade skills, average ranking	**Computer skills, average**	**Marketing skills, average**	**Product development knowledge, average**	**Communi-cation skills, average**	**Networking skills, average**	**Quality mprove-ment knowledge, average**
Accommodation	2,48	2,08	2,28	2,44	2,68	2,17	2,22
Catering	2,68	1,84	2,72	2,66	2,90	2,33	2,18
Activities	2,50	2,31	2,43	2,44	2,88	2,12	2
Other	2,42	2,67	2,75	2,52	2,87	2,32	1,6

Source: Travelli 2002

The least divergent knowledge base was found in communication and the most divergent in quality improvement and computer skills. The knowledge of quality was the best in accommodation sector. Networking skills seemed to be best in the groups ´catering' and ´other'. Best knowledge of trade and product development was observed also in the group ´catering'. Marketing skills were best in the group ´other' and nearly as good in the ´catering' group. However, the computer skills were the most deficient in enterprises in catering sector.

According to the results from Travelli survey, more education is recommended in order to systematically strengthen the weaknesses of the individual entrepreneurs and workers in the tourism sector. The education should be planned by keeping in mind the basic knowledge level of the individuals and the quality of the enterprise. The participants could be divided in the groups, e.g. according their business intensity: hobby-based, part-time workers and full-time workers. The education should concentrate on increasing the knowledge of tourism business. It would be recommended to organise such kind of education, which would lead on to a degree or diploma to the participants.

The tasks and results in different projects should be used to increase the knowledge base of the enterprises. The effective way is learning by doing e.g. in participating on the arrangements of the tourism fairs etc.

When planning the actions, which are supposed to improve the knowledge, the aims should be well formed on individual level (degrees or diplomas). This would support and increase the learning of an individual. The planning of assessment (range of courses, goals and achievements of education) should be closely linked with the planning of education.

When we compare the individual skills with the enterprise skills, a conclusion can be made that plenty of unused potential is available in tourism SMEs. The individual knowledge base does not show in the practical functions of the enterprise. E.g. the communication and networking skills of the individuals are not well utilised in the enterprises.

The computer skills had the lowest knowledge base. 40,5 % of respondents reported no or very little knowledge in computing skills (grade > 2). The best knowledge they had in word processing, emailing and Internet usage. The biggest deficiencies were in the usage of data base programs. In general the best computing skills were observed in ´activities' and worst in the group ´catering'. Operating systems were best mastered by the 'accommodation' group. The computing skills were considered as a sector, in which all the companies needed more education. According to the results, the good skill level were not achieved in any of the groups. (TRAVELLI-matkailualan osaamiskartoitus 2002.)

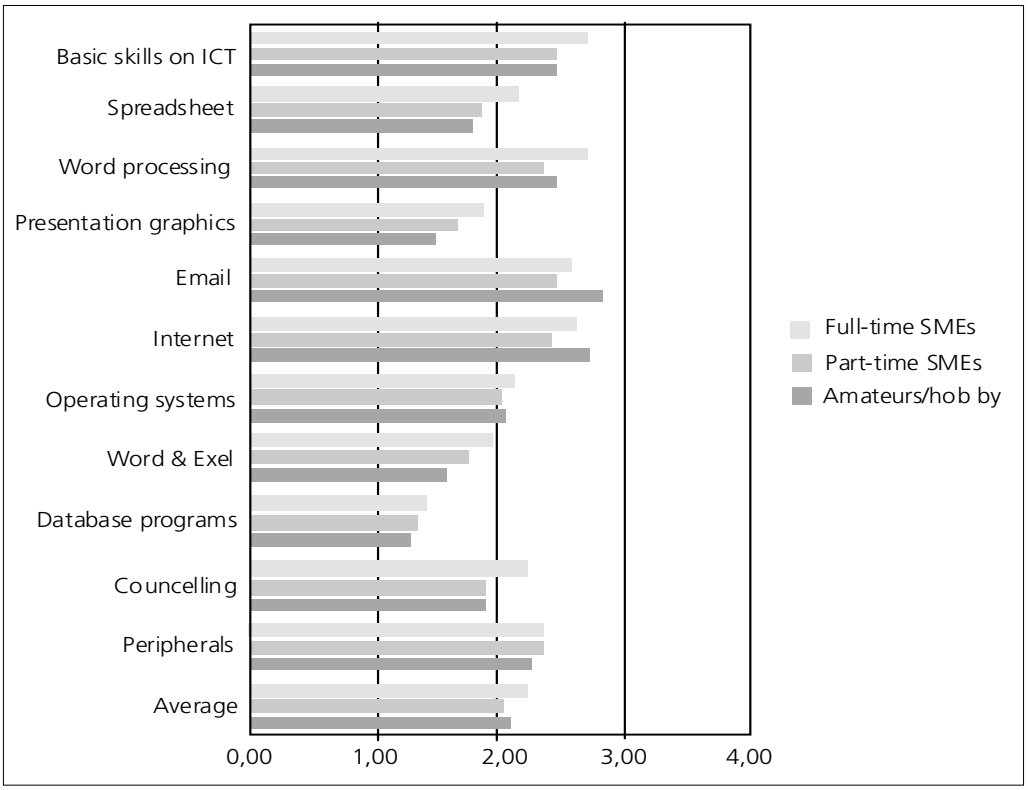

Figure 2. *The knowledge level (1= hardly any knowledge, 2= some knowledge, 3=good knowledge and 4=excellent knowledge) of different ICT skills divided by the intensity of the* Source: *entrepreneurship. Source: TRAVELLI-matkailualan osaamiskartoitus 2002.*

4.2 Developing Know-how, Challenges and Development Needs

According to Palokangas (2003) 67 % of farmers are interested in ICT training. The majority wants to have training every year. At first the training should consist of basic computer skills and after that special programmes needed in running a farm, e.g. professional agricultural programmes, graphics etc. Training should be short, a couple of days long at the most and preferably arranged near farms in small groups. Training for updating programmes should also be held regularly. In rural areas there is an obvious need for computer support service network. (Palokangas 2003.)

Ovaskainen (2002) studied in his research the future development of electric commerce and the know-how needs of SMEs in e-business. The enterprises were chosen on that basis that their lines of businesses were seen to have great potential in e-business in the future. The enterprises situated all over in Finland, both in growing centres and rural areas.

According to Ovaskainen enterprises have to choose their strategy concerning e-business by taking their personal starting points and targets realistically into consideration. Factors affecting on the know-how needs in e-business are enterprise size, the present state of development, experiences, the role of e-business in the company, the market segment and the business field and product. The more comprehensive the e-business decisions are, the more comprehensive know-how is needed. (Ovaskainen 2002.)

To meet the needs of the entrepreneurs, the training has to be dynamic, renewable and flexible. It is necessary to enterprises to take care of developing know-how continuously. Enterprises need to be proactive in their development. According to Ovaskainen, economical know-how is emphasized in the future electric commerce. Long term strategic planning will be the most important success factor. Different areas of know-how intertwine more and more in the future and successful enterprises have to able to combine different fields of know-how to an entity that offers unique added value to the customer. (Ovaskainen 2002.)

Ovaskainen (2002) made some interesting conclusions in his research about the know-how needs of enterprises in e-business. According to him e.g.

- In the future in e-business besides the technology the economic know-how is strongly emphasized
- The know-how needs are very versatile and processes are more integrated, which results to need for capability to control more and more wide entireness
- There will be a great demand for persons who have know-how on business and techniques and who can perceive and control complicated entireness
- Different areas of know-how seem to intertwine more tight together. For example experts on technology are expected to have more and more "softer" approaches to develop user-friendly solutions
- It seems that the need for multiply skilled persons is increasing at the same time as the need for very narrow special field experts, e.g. data security experts

- For the success in business it is essential for the enterprise to be able to gather different people into functional and innovative teams, whose members complement each other with their know-how and produce new solutions that bring added value to customers.

According to Ovaskainen (2002) following aspects in the know-how needs of SMEs are, and should be emphasized:

- For SMEs it is first of all essential to concentrate on their own strategic core business and to develop it to a superior competitive advantage in their market segments
- An advantage to SMEs is that they often have to control a smaller action area than bigger enterprises, which helps in developing strategic know-how
- In SMEs the need for diversified know-how is emphasized because due to the lack of resources. They can usually not employ specialised staff for different tasks
- Due to things mentioned above, it can be estimated that in the future the educational needs are very diversified. The essential questions for SMEs are:
  - to utilise different possibilities of lifelong learning
  - to develop the skills of the staff and in service training possibilities.
- It is also important to entrepreneurs to decide what actions they can do by themselves and what actions should be outsourced. To do this enterprises need strategic know-how and know-how to purchase outsourced services.

Ovaskainen also suggests some measures how to develop e-business training:

- Trainings, that are tailored especially to the enterprises and use diversified methods to develop know-how in close connection to the actual work, are needed.
- Functional basic education plays a key role in getting professionally skilled employees, which emphasizes the importance of the quality of education system.
- The lack of know-how resources in SMEs could be compensated by providing special training subsidies and long-term training programmes for enterprises.
- In developing e-business know-how of SMEs, the flexible co-operation between educational institutions and enterprises is essential.
- Enterprises can benefit from different kind of e-business projects that are implemented together with special experts.
- A big challenge is, how to speed up training cycles and how to develop training to react and transform fast enough for the needs of business sector.
- In addition to the professional skills, the role of universal ICT skills and capability to understand wide entireties should be emphasized in education and training in future. (Ovaskainen 2002.)

5 Challenges and Conclusions

SMEs in Central Finland are quite active in introducing and using ICT in their businesses. The attitudes towards the use of ICT are mostly positive and in this respect, as a region it does not differ to other regions in Finland. There have been several projects in the region in which the computer skills of entrepreneurs and their personnel have been developed. There has been a lot of training supply, but enterprises have not been very active to take part into those trainings. Many of the trainings have been cancelled or arranged to less participants than planned, which increases the costs. In the future the organising and the methods of training must be examined intimately.

In the smallest rural enterprises the problem is, that although the entrepreneur is willing to participate in ICT training, in practice he/she hasn't the time for it. Therefore the training should not be too long, at most 1–2 days, and they should be arranged near the enterprises. Entrepreneurs prefer the consultation as the best way of training, but it is a very expensive method. Training in small groups has been more cost efficient. The willingness or capability to pay for ICT training is not very significant in rural enterprises. From the trainer's point of view, it happens a lot that although the needs for training have been studied very carefully and the courses are tailored according to enterprises' request, still the trainings are cancelled because there are not enough participants.

There is also a lot of competition to the ICT training courses. E.g. farmers are, at this moment, in the situation that they have to make very strict choices, in what trainings they will participate because the supply is so huge and the time is probably the most limiting factor in their businesses. In that case trainings that relate to applying for EU subsidies (some of them are also obligatory) or developing product quality (required by dairies) have been given the priority. ICT trainings are not in the top of that list. So, even there is a strong interest towards ICT training, it does not necessarily materialize in actions.

There is a lot of regional variation in Internet Connections in Central Finland region. Getting fast and reliable broadband connections available for everyone is one of the most important development challenge in Central Finland at the moment. In the sub-regions there are several ongoing projects dealing with this subject. For example Keuruu, Multia and Petäjävesi have made a mutual application for a pilot project to build a wireless broadband to the sparcely populated areas of these municipalities. The general trend is, that the broadband is seen to promote the competitiveness of enterprises, to give new sources of livelihood e.g. teleworking, to attract new inhabitants to municipalities and to increase well-being and equality among citizens.

The level of ICT technology used in enterprises increases continuously. The capacity of computers is improving all the time. Prices of telecommunications links are going down due to heavy competition in the market. It can be estimated that in Central Finland region great number of enterprises will take a fixed Internet-connection in use in near future. This will make the use of ICT services more comfortable and faster and it will hopefully also increase the utilization rate of these services. Developing better telecommunications links is seen as

the most important way to enhance usage of ICT services in SMEs in Central Finland region. When studying the process phases of introduction of ICT (phases: beginning, adoption, application, acceptance, routine work, rationalization) to the SMEs, it can be said that most of the SMEs in Central Finland are acting between the phases "application" and "routine work". Some SMEs use certain services already from daily basis. The biggest enterprises are maybe already in the last phase, the rationalization phase. They use ICT services in a large scale and they have also integrated systems. In the future ICT will not be a separate sector in the enterprise´s infrastructure. It is inevitable that ICT will fuse into the basic activities of the enterprises. ICT service suppliers have to build services from the basis of enterprise´s basic business functions and not services only for technologies' sake. The quality of services has become better. This is the only way to increase the use of services.

Because the enterprises especially in rural areas in Central Finland are practically all microentrepreneurs, they usually can´t afford to employ personnel that is responsible only for ICT infrastructure. This will lead to big risks in ICT usage. The know-how of ICT is not very high in enterprises and computers and software is often outdated. There are often lack of technical aid and lack of money to invest in ICT solutions. The most essential issue is, that enterprises have the possibility to choose that kind of solutions that are cost effective and rational especially in their businesses.

In developing e-business, Ovaskainen (2002) states that the standpoint must be more human and customer-oriented than too much technological oriented. E-business will have multiform effects on enterprise´s functions, competition situation and markets, which calls for new kinds of know-how from the entrepreneur and the whole staff of the enterprise. One essential question for enterprises is, how they are going to provide this know-how and what parts of these actions are outsourced to specialized e-expert services.

In future one important issue is the SME´s position on e-business markets. SMEs´ have smaller financial resources and limited know-how capital etc. Also the input-output relationship in investments must be observed in a much shorter period in SMEs than in bigger firms. Due to this, SMEs are more dependent on public subsidies in developing e-business. Also the trend is that e-business should be integrated in enterprise´s other functions. There is also a risk that if SMEs do not come in e-business in any form, it can cause the enterprises to loose their position as a respectable business partner in the future. (Ovaskainen 2002.)

Know-how is becoming increasingly deciding factor of competitiveness of an enterprise. Enterprises need both specialised experts and also extensive personnel, who can control wide entitnes. Especially SMEs have difficulties in employing a large number of experts. So they have to develop know-how from the standpoint of developing the existing staff´s know-how and to seek special services from experts outside the firm. (Ovaskainen 2002.) This will highlight the role of external information in the decision processes of small SMEs.

Training is an essential way to achieve new know-how to the enterprises. In order to rise to the challenge of e-business, all training models should undergo a transformation and become more flexible. Regionally there is a threat that there are not enough capable trainers available.

Besides degree training programmes there is an increasing need for trainings tailored specially for enterprise in question. Also ways of learning by doing are coming in a more important role in developing know-how. Measures to support lifelong learning are important. Both experts and enterprises stress that different models of training are additional and provided know-how must be diversified. Different kinds of public subsidies for training of SMEs´ personnel would be a good way to promote e-business. Those subsidies should not effect on the competition situation. (Ovaskainen 2002)

Enterprises want to have versatile contents on their Internet pages as well as the Internet services targeted to the entrepreneurs, but they are not willing to pay for these very much. The same trend is evident concerning fast broadband connections in enterprises located in sparsely populated areas.

According to researches in Central Finland, rural tourism enterprises are very interested in mutual Internet marketing. To start with co-operation in mutual projects is seen as a very good method to promote further co-operation. In Central Finland there are at the present several ongoing development projects dealing with marketing and product development of rural tourism business. In those projects rural tourism enterprises create networks, develop new service packages and Internet as marketing channel. In the future more development efforts must be directed towards rationalization of actual e-business. Enterprises need knowledge of the most efficient and profitable Internet channels and methods to market their services. Also it is still relevant to continue improving the quality of the home pages of enterprises. The aim is that all entrepreneurs should be able to update their home pages, and for that they need more training and consultation.

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Appendix 1. Development Companies, Associations and Educational Organisations Related to the Rural SMEs in Central Finland

A Development and Counselling Organisation

In addition to national agencies and departments with regional offices, there are several different kind of development organisations providing assistance to rural SMEs in Central Finland region. The most important ones are listed below.

KeuLink Oy – Keuruu

This enterprise supplies development and consulting services to other enterprises.
www.keulink.fi

Karstulanseutu Oy - Karstula

Karstulanseutu Oy provides following services to enterprises: consultation, declarations and applications to authorities, business planning and profitalibility calculations, financing, business development, business premises etc.
www.karstulanseutu.com

Jykes Oy - Jyväskylä

This company creates and develops operational precondition for enterprises, promotes emergence of new business activities and new jobs and develops co-operation in Jyväskylä and its surrounding municipalities.
www.jykes.fi

Witas Oy - Viitasaari

The company advises new or existing enterprises in their business actions, in their growth or in finding capable employees or in developing know-how.
www.witas.fi

Ääneseudun Kehitys Oy - Äänekoski

This enterprise provides consultation services for enterprises in Äänekoski region.
www.aanekoski.fi/

Jämsän Seutukunnan Kehitys Oy

This company was founded in 1994 to be a regional development office of business and tourism for the four neighbouring municipalities; Jämsä, Jämsänkoski and Kuhmoinen. JÄMSEK was founded to lay the foundation for the development of local business. It offers counselling for those who are going to start a company of their own, supports the establishment of new companies and enhances co-operation between municipalities and businesses.
www.jamsek.fi

Kiven Oy

www.kivijarvi.fi/kiven.php

Saarijärven Seudun Yrityspalvelu Oy

The company develops the local business by offerin counselling for those who are going to start a company of their own, supports the establishment of new companies and its financial arrangements and promotes development of existing enterprises.
www.saarijarvi.fi/ssyp/

Jyväskylän Teknologiakeskus Oy

The company develops and strengthens businesses that base on new knowledge and technology.
www.jsp.fi

Jämsän Seudun Yrityshautomo

The company supplies enterprises with premises and produces office and expert services for new enterprises in Jämsä sub-region.
www.jamsek.fi/yrityshautomo

Viisari Ry

This registered association for regional development executes the LEADER+ programme in ten municipalities in Northern Central Finland.
www.viisari.com

Keski-Suomen talo

This development centre supplies services for enterprises, municipalities and public administration.
www.keskisuomi.fi/kstalo

B Educational Institutions

Jyväskylän yliopisto

University of Jyväskylä is a multi-disciplinary scientific organization having nearly 15 000 degree students, and exchange students from some 150 foreign universities.

Jyväskylän ammattikorkeakoulu

Jyväskylä Polytechnic is a multi-disciplinary organization having 8 units, almost 30 degree programmes and 7500 students.

Pohjoisen Keski-Suomen Oppismiskeskus, POKE

Poke is a multi-disciplinary vocational education institution in Northern Central Finland. It gives programme degrees to both young people and adult people and also has apprenticeship students.
web.poke.fi

Jämsän seudun koulutuskeskus

This is a multi-disciplinary vocational education institution in Southern Central Finland. It provides degree programmes to both young people and adults and has in-service trainings.

www.jkouke.fi

Alkio-opisto/Humanistinen ammattikorkeakoulu Humak

Alkio College is a learning center with a social focus, which also embraces multiple values. Alkio College provides versatile and high quality education in many fields of studies. It has also the broadest selection of Open University studies among the colleges in Finland. It is even possible to complete a Bachelor's degree (in sociology) in Alkio Collage, as well as a polytechnic Bachelor's degree. Alkio College is a member of Humanities Polytechnic.

www.alkio.fi

Keski-Suomen käsi- ja taideteollisuusoppilaitos

A vocational education institution having degree programmes both to young and adult people in handicraft and industrial arts.

www.peda.net/varaja/kskto

UNIVERSITY OF HELSINKI

Seinäjoki Institute for Rural Research and Training